Pacific Terminal Services, Inc.

Oil Spill Contingency Plan

Portland Marine Fuel Oil Facility

7900 NW ST. HELENS RD.
PORTLAND, OREGON 97210

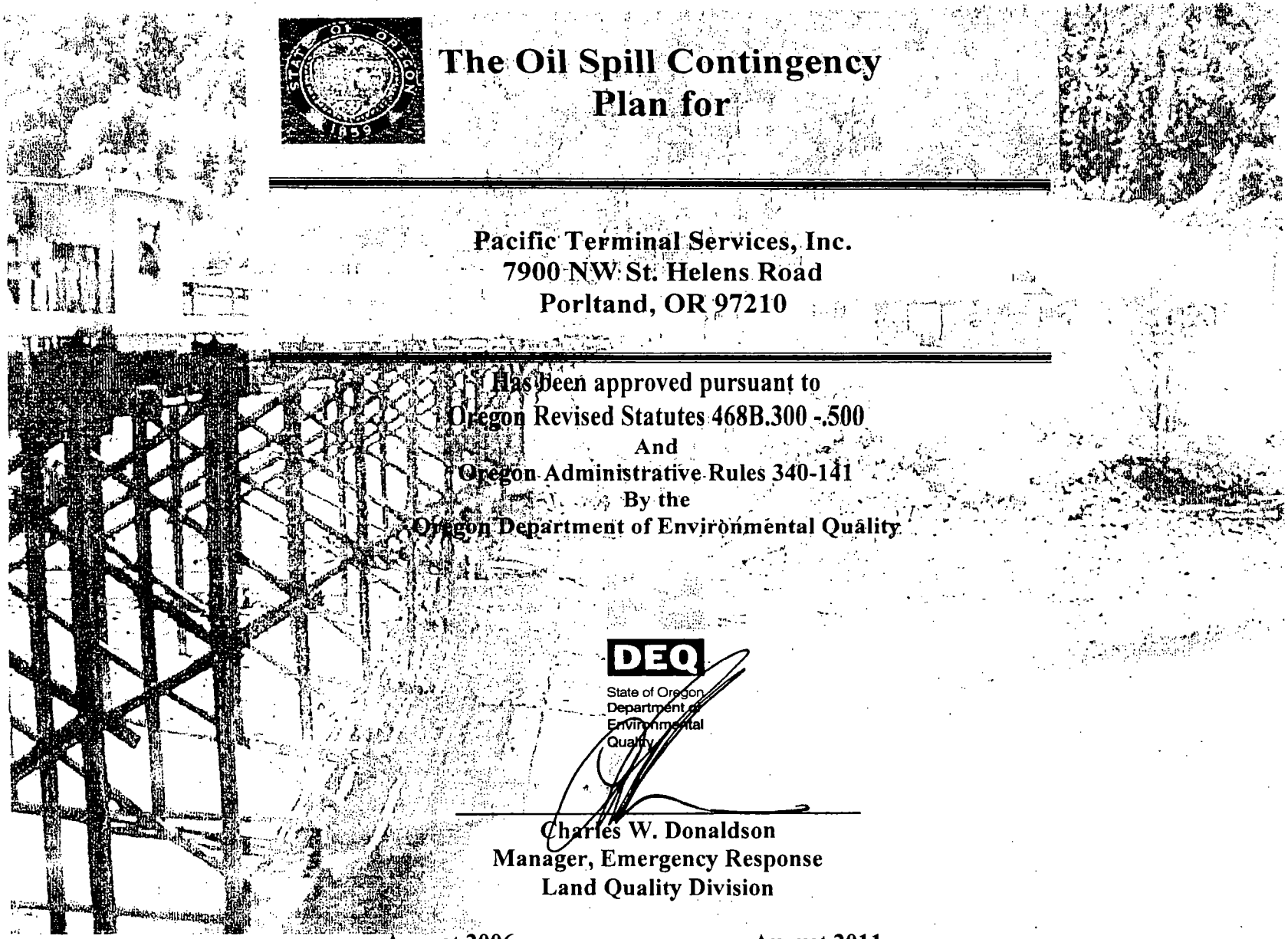
June 2006

LOG OF AMENDMENTS TO THE PLAN

Amendment Number	Date	Page No.	Description of Amendment	ODEQ Notified? (see Note below)	Approval Initials
1	3/23/07	4-1	Requirement for annual OSRO equipment deployment drill added	Yes	TFG
2	3/23/07	Appendix D	Maps and charts showing location of fish, wildlife and sensitive environments added	Yes	TFG
3	3/23/07	Table 3	Simultaneous transfer information added	Yes	TFG
4	3/23/07	2-8 to 10	Updated contact information	Yes	TFG

Note: The log sheet must provide for a record of the section amended, the date that the old section was replaced with the amended section, verification that the Department was notified of the amendment pursuant to OAR 340-141-0220(3) and the initials of the individual making the change. A description of the amendment

and its purpose must also be included in the log sheet, or filed in the form of an amendment letter immediately after the log sheet.



The Oil Spill Contingency Plan for

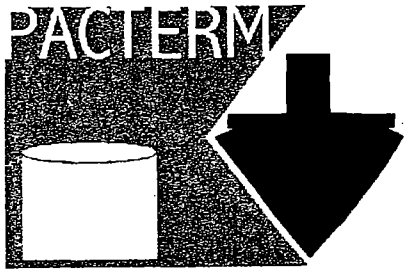
Pacific Terminal Services, Inc.
7900 NW St. Helens Road
Porltand, OR 97210

Has been approved pursuant to
Oregon Revised Statutes 468B.300 -.500
And
Oregon Administrative Rules 340-141
By the
Oregon Department of Environmental Quality

DEQ
State of Oregon
Department of
Environmental
Quality

Charles W. Donaldson
Manager, Emergency Response
Land Quality Division

August 2006	August 2011
Date of Approval	Valid Until



Pacific Terminal Services, Inc.

Oil Spill Contingency Plan

Portland Marine Fuel Oil Facility

7900 NW ST. HELENS RD.
PORTLAND, OREGON 97210

June 2006

General Information

Owner/Operator of Facility:
The owner of the facility is Northwest Natural Gas. The facility is leased from Northwest Natural Gas by Fuel and Marine Marketing, LLC (FAMM). The facility is operated by Pacific Terminal Services, Inc. (PTSI) under contract to FAMM.

Facility Name:
Portland Marine Fuel Oil Facility

Facility Address:
7900 NW St. Helens Road

City, State, and U.S. Zip Code:
Portland, OR 97210

Facility Phone No.:
(503) 240-3452 (Office) (503) 286-5321 (Boiler Room)

Latitude (Degrees: North):
45 degrees, 35 minutes

Longitude (Degrees: West):
122 degrees, 46 minutes

Dun & Bradstreet Number:
042542345

Standard Industrial Classification (SIC) Code:
5171

Maximum Oil Storage Capacity (Gallons):
11,570,454 gallons

Worst Case Oil Discharge Amount (Gallons):
3,360,000 gallons

Facility distance to Navigable Water. Mark the appropriate line.
0-1/4 mile __X__ ¼ - ½ mile _____ ½ mile – 1 mile ____ >1 mile ____

APPLICABILITY OF SUBSTANTAIL HARM CRITERIA

Does the facility transfer oil over-water to or from vessels and does the facility have a total oil storage capacity greater than or equal to 42,000 gallons?

Yes X
No

Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and, within any storage area, does the facility lack secondary containment that is sufficiently large to contain the capacity of the largest aboveground oil storage tank plus sufficient freeboard to allow for precipitation?

Yes
No X

Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance (as calculated using the appropriate formula in Appendix C or a comparable formula) such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments?

Yes X
No

Does the facility have a total oil storage capacity greater than or equal to I million gallons and is the facility located at a distance (as calculated using the appropriate formula in Appendix C or a comparable formula) such that a discharge from the facility would shut down a public drinking water intake?

Yes
No X

Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and has the facility experienced a reportable oil spill in an amount greater than or equal to 10,000 gallons within the last 5 years?

Yes
No X

Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining information, I believe that the submitted information is true, accurate, and complete.

Signature: Troy Goodman
Name: Troy Goodman
Title: Facility Manager
Date: June 2006

LOG OF AMENDMENTS TO THE PLAN

Amendment Number	Date	Page No.	Description of Amendment	ODEQ Notified? (see Note below)	Approval Initials

Note: The log sheet must provide for a record of the section amended, the date that the old section was replaced with the amended section, verification that the Department was notified of the amendment pursuant to OAR 340-141-0220(3) and the initials of the individual making the change. A description of the amendment

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b) Table of Contents	Page ii
c) Amendment Log	Page i
2) Emergency Response Action Plan:	
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ii) Qualified Individual Requirements	Sections 1.4.5 and 2.4.1
iii) Response Organization	Figures 1-5 and 1-6
iv) Response Contractor Personnel	Appendix A
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d) Sensitive Areas: Economic and Environmental Impact Areas	Sections 3.2, 7.0 and App. D
e) Disposal Plan	Section 3.3 and App. K
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EPA Cross Reference Index

For the following elements of 40 CFR 112.20(h):	Refer to Table of Contents Section:
1) Emergency Response Action Plan:	Field Manual, Appendix H
2) Facility Information:	
Location of Facility:	Section 1.1.3
Owner/Operator:	Section 1.1.3
Emergency Response Coordinator (Qualified Individual):	Section 1.4.5 and 2.4.1
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1.0 GENERAL AND ADMINISTRATION

1.1 PURPOSE AND SCOPE

1.1.1 Purpose

The purpose of this Facility Oil Spill Contingency Plan is to address the requirements of the United States Federal Water Pollution Control Act as amended by the Oil Pollution Act of 1990 (OPA 90), the Oregon State Senate Bill 242, and to address the following implementing rules and regulations:

a) The United States Coast Guard (USCG) Title 33 Code of Federal Regulations Part 156

b) The United States Environmental Protection Agency (EPA) regulations for Facility Response Plans, Title 40, Code of Federal Regulations, Part 112, Section 20 (40 CFR 112.20), and

c) The Oregon Department of Environmental Quality (ODEQ) Regulations Pertaining to Oil Spills into Public Waters, Oregon Administrative Rules, Chapter 340, Division 141 (OAR 340-141).

The primary focus of this facility spill plan is to cover releases, discharges, or spills of oil from the Pacific Terminal Services, Inc. (PTSI) facility into the waters of the Willamette River. However, all discharges of oil into the environment, either into the water or onto the land, must be reported to both state and federal government agencies. This plan may be used to coordinate and manage the response to either water or land spills.

In the state of Oregon, the ODEQ is the state government agency that is responsible for responding to spills of oil and is required to identify, investigate, and provide for adequate clean-up of property contaminated with oil. Owners and/or operators of oil facilities are required to report releases, discharges, or spills of oil. The purpose of the reporting requirements is to ensure that the ODEQ and local emergency response personnel are aware of all accidents that may threaten human health or the environment.

Oil spills in any amount outside of secondary containment (onto the ground, into the ground, or onto surface waters) and oil spills exceeding 10 gallons inside of secondary containment must be reported immediately by calling local authorities and the ODEQ regional office. Spills must be reported regardless of whether or not public health or the environment is threatened. In addition, if the released oil could result in exposure to persons outside of the boundaries of the facility, the National Response Center and the Oregon Emergency Response System must be notified immediately. Reporting procedures are covered in Section 2.4, Notification.

Specifically, the plan is designed to:

a) guide facility personnel and clean-up contractors to a flexible and efficient response to contain and clean-up oil spills at the Portland fuel oil facility,

b) identify a Qualified Individual (and an alternate Qualified Individual) with the authority to activate the Oil Spill Contingency Plan, obligate necessary funds, and direct the spill response,

c) list the resources (the labor, equipment, and supplies) that are available for oil spill response,

d) provide information about the facility,

e) coordinate the facility response to oil spills with the response of state, local, and federal authorities who may also respond (the plan seeks to be consistent with state and federal oil spill response plans),

f) provide for training and drills of company personnel and response contractor personnel, and

g) identify environmentally sensitive areas and public and private property placed at risk by spills from the facility and prioritize protection of those sensitive areas and properties.

1.1.2 Affected Geographical Areas

Refer to the Geographical Area Map, Figure 1-1, located in Figures section. The geographical areas addressed by the plan (beginning with the most likely to be affected) are:

a) Lower Willamette River,
b) Sauvie's Island (including Multnomah Channel on the west of Sauvie's Island), and
c) Lower Columbia River.

The EPA calculated Planning Distance for the Portland facility is 35 miles (refer to calculation in Appendix J). The Portland facility is located at Mile 6.5 on the Willamette River and the mouth of the Willamette River is at about Mile 101.5 on the Columbia River. The EPA Planning Distance extends down the Columbia River to Mile 73, near the mouth of the Kalama River. For planning purposes, an oil spill may be expected to spread this distance downstream in the first 15 hours after the spill occurs.

On the northern end of Sauvie's Island is the Sauvie's Island Game Management Area, which is an important area for waterfowl, shorebirds, and cranes. Several private marinas, private houseboat moorage's, and public and private boat ramps are located on the Multnomah Channel, west of Sauvie's Island.

Kelley's Point is a Port of Portland public park with critical wetland areas comprising Smith Lake, Bybee Lake, and the Columbia Slough which drains into the Willamette River approximately 1 mile upstream of the mouth of the Willamette River.

The region is heavily utilized for both industrial and recreational purposes. The Willamette and the Columbia Rivers are marine transportation corridors. Natural Resource protection will be addressed per the currently approved Geographic Response Plans for the Willamette and Columbia River basins. The entire set of applicable GRP's are available at the Portland terminal.

1.1.3 Portland Oil Facility Information

The priorities of PTSI in operating this terminal are:
Safety of Personnel
Protection of the Environment
Meeting Customer Requirements
Providing Timely Service.

Our commitment to the protection of the environment is demonstrated through the vessel pre-booming program. This program minimizes the impact of a potential spill.

The Pacific Terminal Services, Inc. (PTSI) Portland Marine Fuel Oil Facility addressed by this plan is located at the Northwest Natural Gas Company (NWNG) property on the western shore of the Willamette River approximately 6.5 miles upstream of the mouth of the Willamette River, between the St. Johns Bridge and the Railroad Bridge (see the Site Location Map, Figure 1-2, in Figures section). Geographically, the location of the facility is:

Latitude:	45 degrees, 35 minutes,
Longitude:	122 degrees, 46 minutes.

The address and 24-hour telephone numbers of the facility operator are:

Facility Name:	Pacific Terminal Services Inc. Portland Marine Fuel Oil Facility
Address:	7900 NW St. Helens Rd., Portland, OR 97210
County:	Multnomah
Telephone:	(503) 286-9621 (24-hour telephone) or (503) 286-5321 (Boiler Control Room)
FAX:	(503) 286-9794

The procedure for contacting the facility operator on a 24 hour basis is to telephone:
(503) 286-9621.

This number is the telephone number of the facility main office that is answered by office staff Monday through Friday, between 8 AM and 5 PM. After hours, callers will be directed to the on-call person. Also, if the facility is operating, personnel may be reached by calling (503) 286-5321 in the facility boiler control room.

This plan addresses only the operations of PTSI and those oil storage tanks at the facility leased by PTSI from Northwest Natural Gas Company (NWNG). PTSI began operations at this facility in November, 1999. Prior to that time, NWNG operated the fuel oil terminal. The facility has been in industrial service since the early 1900's. All tanks passed API 653 inspection in 1999.

Facility Owner:	Northwest Natural Gas Company
Address:	220 NW Second, Portland, OR 97209
Telephone:	(503) 226-4211

In addition, PTSI operates the pier and pipeline for receipt of liquid coal tar pitch (molten) for Koppers Industries. Liquid coal tar pitch is pumped from ships through a pipeline from the pier to storage tanks located upland new to NW St. Helens Road. Koppers Industries owns the pipeline, storage tanks, and associated process and distribution facilities. Koppers Industries leases the property from NNG.

Corporate:	Koppers Industries, Inc. 436 Seventh Ave Pittsburgh, PA 15219 (412) 227-2001	Local: Koppers Industries, Inc. 7540 NW St. Helens Road Portland, OR 97210 (503) 286-3681

Regulatory Jurisdiction

For the purpose of dividing the federal regulatory jurisdiction between the EPA and the USCG, the oil facility at PTSI is defined as a "complex" consisting of a non-transportation related facility and a marine transportation related facility. The non-transportation related facility includes seven aboveground storage tanks (with capacities shown in Table 1 of the Tables section, located in secondary containment areas (surrounded by concrete or dirt retaining walls at least 12 feet high), each with a capacity large enough to contain the volume of the largest storage tank. Refer to Figure 1-3 (in Figures section), Facility Layout. The non-transportation related part of the facility complex is regulated by the EPA.

The marine transportation related facility portion of the complex includes three steel aboveground oil transfer pipelines running between the aboveground storage tanks and the fuel oil dock. The No 6 fuel oil pipelines are insulated and steam heat traced

to heat the fuel oil in the pipeline before transfers begin. The marine transportation related part of the facility complex is regulated by the USCG.

The boundaries between the non-transportation related part of the complex and the marine transportation related portion are the valves in the oil transfer pipeline at the shore end of the dock walkway.

For state regulations, the jurisdiction of the ODEQ covers the entire facility.

1.1.4 Tanks and Facility Operations

The facility is designed to receive and store various grades of fuel oils by tmck, rail car, barge, or tanker and to mix these various grades of oil together to make marine and industrial fuel oils. These products are then delivered by truck or barge. The SIC Code for PTSI is 5171. The aboveground storage tanks operated by Pacific Terminal Services Inc. (PTSI) are shown in the Facility Layout, Figure 1-3 and are listed in Table 1 (shown in Figure and Table sections respecfively).

In addition, liquid coal tar pitch (molten) is received from ships at the pier and pumped to the Koppers upland storage tanks. At the Koppers Facility, various coal tar pitch products are processed, stored, and distributed by truck and by rail car. The SIC Code for Koppers Industries is 2865.

1.1.5 Dock Pipelines

Fuel oil transfers to and from the dock are made in the following three parallel, aboveground pipelines:

a) one 12"-diameter for heavy fuel oil: Line fill capacity: 63 barrels.
b) one 10"-diameter for diesel oil: Line fill capacity: 44 barrels.
c) one 8"-diameter for cutter oil: Line fill capacity: 28 barrels.

These pipelines run aboveground directly from the tank yard areas to the dock "risers" at the dock service platform. All lines may be isolated with the gate valves located at the shore end of the dock walkway and at the dock service platform.

Liquid coal tar pitch transfers from the pier to the upland storage tanks are made through a single 8" product transfer pipe. This pipe increases in size to 10" just after crossing the top of the riverbank. The pipe is heat "traced" with 1" and 2" hot oil pipes attached to the product pipe. The product and heat trace pipes are completely encased with 6" thick insulation. The heat trace fluid is a petroleum based oil similar to diesel fuel oil with a higher flash point.

The liquid coal tar pitch transfer pipe has shut off valves at the ship connection on the pier (two valves – one manual and one remotely motor operated), a valve at the to of the river bank (manually operated), and manually operated valves near the storage tanks to direct the product to the proper tank.

The transfer pipe runs above ground from the pier connection to the storage tank area. The total length of the pipeline is approximately 2000'. The product line-fill capacity is approximately 200 barrels from the ship connection on the pier to the shut off valve near the tank. The heat trace line-fill capacity is approximately 5 barrels from the end of the pier to the shut off valves at the meter shed about 150' inshore of the top of the bank.

1.1.6 Volume of Oil Transfers

Oil tankers delivering oil products into the facility have been as large as 50,000 DWT while the largest barges have had capacities of up to 100,000 barrels. Actual oil volumes transferred are typically much smaller than could be delivered by these large vessels. For example, the average transfer in 2000 was156,000 barrels per month.

Ships bringing coal tar pitch will discharge about 8,400 metric tons (50,000 barrels) of product. Six to twelve ships a year will discharge at the facility. Each discharge will take 36 to 48 hours. The facility will only "receive" coal tar pitch.

1.1.7 Vessel Information

Fuel oil is shipped and received in bulk in oil tank vessels or barges brought to the facility by tug boats. Oil barges vary in length from 120' to 350' and have oil storage capacities that range between 5000 barrels and 75,000 barrels. Some typical barge sizes are listed in Table 2, in Figures section.

Liquid coal tar pitch (molten) is transferred from ships to upland storage tanks. A steel transfer hose will directly be connected between the ship and the pier transfer pipe connection. The ships are conventional dry bulk/container carriers fitted with special deep tanks for carriage and transfer of liquid coal tar pitch. The deep tanks are approximately 8,900 metric ton capacity (approximately 60,000 barrels.) The vessels are about 40,000 DWT capacity and approximately 650' long and 95' wide.

1.1.8 Simultaneous Operations

There is only one loading berth at the facility dock. In general, there is only one transfer to a vessel at a time. However, from time to time, a tug boat, which may be tending a tank barge moored at the dock, may receive diesel oil simultaneously with the transfer to or from the barge. In this case, two facility dock operators are assigned, one to act as the Person-In-Charge of each of the two transfer operations. The oil transfer hose is laid across the barge to the tug boat. The lengths of the tug boats fueled may be as much as 150 feet.

Other operations which may occur simultaneously with barge or ship loading or unloading include:

a) Inter-tank transfers,
b) Truck loading or unloading, or
c) Rail car unloading.

These operations are described in Section 6.0, Spill Risk Variables.

1.1.9 Calculation of Oil Spill Planning Volumes

Worst case planning volumes are calculated to determine the amount of oil spill response resources that are necessary to have available. The ODEQ, the EPA, and the USCG each have different requirements and definitions of worst case planning volumes.

ODEQ Worst Case Spill

The ODEQ defines the Worst Case Spill planning volume as the entire volume of product from the largest aboveground storage tank on the facility site complicated by adverse weather conditions (during which wind, reduced visibility, and sea state hinder but do not preclude normal response operations). The ODEQ Worst Case Spill planning volume is 80,000 barrels, the capacity of the largest aboveground storage tank at the facility.

EPA Non-Transportation Related Facility Worst Case Discharge

The EPA defines the Worst Case Discharge planning volume as the largest foreseeable discharge in adverse weather conditions. The EPA Worst Case Discharge is dependent on the following conditions at the Portland facility:

a) The facility contains more than one aboveground oil storage tank,
b) Each aboveground oil storage tank is located within an adequate secondary containment area with the capacity to contain the volume of the largest storage tank within the secondary containment area with an allowance for rainfall,
c) Some tanks are located together in separated secondary containment areas,
d) The tanks share common piping systems for transferring fuel oil. However, the tanks are all separated by pipeline valves that allow each tank to be operated independently. The tanks are not "permanently manifolded together" in which case they would be designed, installed, and/or operated to function as one storage unit. The evidence that the tanks are not operated as one storage unit is the fact that, except for coincidences, each tank has a different oil level at any given time. This fact can be verified at the facility from the records of the daily gauging of the tank levels which is done for inventory accounting purposes, and
e) The facility is adjacent to navigable waters.

Based on these conditions, the EPA Worst Case Discharge planning volume is 100% of the capacity of the largest aboveground oil storage tank within the common secondary containment or 80,000 barrels.

USCG Marine Transportation Related Facility Worst Case Discharge

The USCG also defines the Worst Case Discharge planning volume as the largest foreseeable discharge in adverse weather conditions. Adverse weather conditions include consideration of wave height, ice, temperature, visibility, and currents. The Worst Case Discharge is based on the discharge from all pipes carrying oil between the marine transfer manifold and the non-transportation related portion of the facility. The marine transportation related facility pipe extends from the connection with the vessel to the first valve inside the secondary containment area surrounding the aboveground storage tanks in the non-transportation related portion of the facility.

The discharge from each pipe is calculated as follow:

a) The maximum time to discover an oil release from the pipe in hours, plus
b) The maximum time to shutdown the oil flow from the pipe in hours, multiplied by
c) The maximum flow rate in the pipe expressed in barrels per hour, plus
d) The drainage volume for the pipeline between the marine manifold and the non-transportation related facility in barrels.

In addition, the USCG defines the Maximum Most Probable Discharge as the lessor of 1200 barrels or 10% of the volume of the USCG Worst Case Discharge.

Finally, the USCG defines the Average Most Probable Discharge as the lessor of 50 barrels or 1% of the volume of the USCG Worst Case Discharge.

At the Portland facility, there are three oil transfer pipelines between the oil storage tanks and the dock. The linefill capacity (or drainage volume) of these pipelines is:

Pipeline Diameter (Inches)	Pipeline Linefill Capacity (Barrels)	Oil Group in Pipeline
12	63	IV or V
10	44	Ili
8	28	IV
Total	135	

During transfer operations, the transfer flow rates are monitored periodically by the shift supervisor. For planning purposes, it is assumed that it could take 30 minutes for the facility personnel to discover an oil release. The time required to shut down the oil transfer operation is less than 5 minutes. The maximum oil transfer flow rate for all oil groups in each pipeline is about 5000 barrels per hour. Therefore, the USCG Worst Case Discharge planning volume is:

Oil Group Transferred	Worst Case Discharge (Barrels)	Maximum Most Probable Discharge (Barrels)	Average Most Probable Discharge (Barrels)
III	2961	296	30
IV	3008	301	30
V	2980	298	30

1.1.10 Oil Spill Response Planning Scenarios

The ODEQ, the EPA, and the USCG each have different requirements and definitions for oil spill response planning scenarios as follows:

ODEQ Oil Spill Scenarios

a) Small spill less than 500 gallons or approximately 12 barrels.
b) ODEQ Worst Case Spill of 80,000 barrels.

EPA Oil Spill Scenarios

a) EPA Worst Case Discharge of 80,000 barrels.
b) A discharge of 2,100 gallons or 50 barrels.
c) of the capacity of the largest aboveground oil storage tank at the facility but not more than 36,000 gallons and not less than or equal to 2,100 gallons which is 36,000 gallons or approximately 857 barrels.

USCG Oil Spill Scenarios

a) Average Most Probable Discharge of 30 barrels.
b) Maximum Most Probable Discharge of 301 barrels.
c) USCG Worst Case Discharge of 3008 barrels to the maximum extent practicable.

To cover all of these different scenario cases for which the spill response actions may be basically the same, Appendix G presents three spill scenarios in accordance with the EPA requirements as follows:

a) Small spill: 50 barrels,
b) Medium spill: 857 barrels, and
c) Worst case spill: 80,000 barrels.

1.1.11 Initial (One Hour) Response

This plan outlines actions for the prompt and proper protection of the environment from potential oil spills at the Portland facility, for the immediate notification and mobilization of resources upon discovery of spills, and for the initial deployment of personnel and equipment at the site of the spill within one hour of PTSI's detection of any spill (subject to suitable safety conditions), as mandated by law.

1.2 UPDATES AND DISTRIBUTION

1.2.1 Updates

It is the responsibility of the Facility Manager to update, amend, and revise this plan to account for changes in the laws and regulations, in on-site equipment and personnel, in facility operations, in Primary Response Contractor(s), and other factors that materially affect the plan and spill response abilities. All changes in the plan must be listed in the Log of Amendments.

The plan will be reviewed annually by the Facility Manager for completeness and accuracy of such items to ensure response readiness. Also, after every training drill and after every significant spill response, the plan will be reviewed for possible improvement. Significant changes in the plan will be resubmitted to the ODEQ, USCG, and EPA for approval.

Changes in Response Capabilities

As soon as possible, and within 24 hours after any significant change which could affect implementation of this plan (such as a "substantial decrease in available spill response equipment or persomel"), PTSI will notify the ODEQ in writing (a letter transmitted by facsimile is acceptable written notice). With its written notice, PTSI will provide a schedule for the return of response resources to full operational status.

Failure to notify the ODEQ will be consldered "non-compliance" and is grounds for the ODEQ to revoke, or place conditions on, the approval of this plan (refer to OAR 340-141-0220.) It is recognized that the facility cannot legally operate without an approved plan.

Minor Changes

Minor changes affecting implementation and accuracy of the plan such as "minor variations in equipment and persomel, call-out lists, and operating procedures" are not considered "significant" changes and do not require 24-hour notif cafion of the ODEQ.

Expiration

This plan expires 5 years after approval on the date shown on the Certificate of Approval fumished by the ODEQ.

Renewal:

At least 65 calendar days prior to expiration, PTSI will submit a:

a) New plan to the ODEQ, USCG, and EPA for approval or
b) Letter requesfing a review of the previously approved plan.

1.3 USE OF THE OIL SPILL PLAN

This oil spill plan will be used to manage the response to any spill at Portland unless:

a) The spill is clearly the responsibility of another party,
b) Approval is sought and received from the ODEQ or USCG to deviate from the plan,
c) Executing the plan would jeopardize human health and safety,
d) Unforeseen conditions force deviations to avoid environmental damage, or
e) The ODEQ or USCG directs a deviation from the plan.

To ensure use of this oil spill plan, PTSI will:

a) Provide copies of the plan to the:

- Facility Manager, the Qualified Individual
- Alternate Qualified Individual, and
- Portland Facility, Boiler Room (to be kept in a conspicuous, accessible place)

b) Instruct management and operating personnel in the use of the plan through formal training and drills.

For new employees, initial instructions in the use of the oil spill response plan, will occur during the formal training and certification. This initial instruction will cover the major elements of the plan including detection, emergency shutdown, mitigation, organization, notifications, and communications which pertain to the employee's oil spill response role and job description.

On-going instructions in the use of the plan will occur two times per year when the required oil spill drill exercises described in Section 4.0 are held. Drill exercises involve a formal training session approximately one hour followed by the drill itself. Both activities will offer opportunities to instruct personnel on use and implementation of the oil spill plan.

1.4 COORDINATION OF PLANS AND RESPONSE ORGANIZATION

1.4.1 Coordination with State and Federal Plans

To achieve a coordinated response to major spills, this plan seeks to be consistent with:

a) The USCG Local Oil Spill Contingency Plan for Portland,
b) The National Oil and Hazardous Substances Pollution Contingency Plan (NCP), refer to 40 CFR 300,
c) The Area Contingency Plan (ACP) derived from OPA 90, and
d) Local hazardous materials emergency response plans.

The Plan recognizes the requirements of the National Contingency Plan (NCP), 40 CFR 300 and the Northwest Area Contingency Plan (ACP). The ACP functions as the primary response planning document for the USCG and the ODEQ. Refer to Figure 1-4, "Relationship of Federal, State and Local Oils Spill Contingency Plans", located in Figures section.

1.4.2 Incident Command System

PTSI will adopt, as part of this plan, the Incident Command System (ICS) as the means for organizing and managing the response to major spills. The adoption of ICS is done to ensure the teamwork, participation, coordination, and cooperation between all parties involved in spill response even when conditions and circumstances change frequently as a spill response progresses.

Incident Command System

The Incident Command System (ICS) implemented will be similar to the ICS used by state and federal agencies for oil spill response organization and management. The purpose of adopting and using the ICS for oil spill management is so the facility spill response efforts can be coordinated with the primary response contractors and the government agencies through the use of common terminology, modular organization, centralized command, integrated communications, and coordinated use of response labor and equipment resources.

ICS Implementation and Use

The OSC will manage the spill response by delegating the responsibilities and authority for each of the ICS functional positions (Planning, Operations, Logistics, and Finance) to others as required to effectively accomplish the spill response activities. This delegation is from the top down and is done as response activities increase. When the OSC delegates, the assigned individual is responsible for accomplishing all corresponding sub-functions as outlined below. If the workload increases, he or she will further delegate portions of the work to subordinates. This procedure provides for smooth rapid mobilization and demobilization to meet changing spill response requirements.

ICS Span of Control

During an emergency, the spill response organization must be built up rapidly. Management of the response organization is complicated if too many people report to each manager. Effective crisis management limits the number of people reporting to each emergency manager to the range of three to seven, with five being the optimum. This is called a "manageable span of control" for each emergency manager. As the emergency response changes during an actual spill and the work load increases, duties for each response task are delegated to subordinate managers so that each manager operates effectively within a reasonable span of control.

Unified Command

For minor spills, the facility OSC may perform all of the ICS management functions. For larger spills, the OSC may call upon additional facility personnel as shown in Figure 1-6, in Figures section, to help manage the spill response. For major spills, the spill response may be managed by a "Unified Command" involving the Federal OSC (USCG), the State OSC (ODEQ), and the facility OSC. A unified command is required for major spills where the public safety and welfare is at risk and significant environmental damage is imminent. In any case, either the

facility OSC or the Unified Command is the single authority in charge of the spill response operation. At the discretion of either the facility OSC or the Unified Command, additional individuals are assigned responsibility for subsidiary sections on the response. These individuals will have the authority to make decisions and direct response activities within their respective areas of responsibility.

1.4.3 Precedence Between Facility Oil Spill Plan and Vessel Oil Spill Plan

It is important that vessel and facility oil spill response plans work together to eliminate conflicts in oil spill response strategies between the vessel and facility plans when a vessel is berthed at a marine facility dock. The vessel and the facility plans will both be operative at all times when a vessel is berthed at the Portland facility. In case of an oil spill, regardless of cause, fault, or source, when a vessel is berthed at the Portland facility, the Phase I, Emergency (First Hour) Response will be activated. After, the Phase I response, the source of the spill will determine which plan is activated as follows:

a) If the spill is from the berthed vessel: The vessel oil spill response plan will be activated to provide facility site specific containment and clean-up as guided by the facility oil spill response plan,

b) If the spill is from the marine facility: The facility oil spill response plan will be activated immediately, or

c) If the spill is from an unidentified source: Both facility and vessel plans will be activated.

In case of a conflict where both the vessel plan and the facility plan are activated, the response should be guided by the facility plan which is more site specific.

Questions of coordination, conflicts, or precedence between a vessel plan and the facility plan may be decided by the State On-scene Coordinator (SOSC) and/or the Federal On-scene Coordinator (FOSC).

1.4.4 Response Organization

Phase I Oil Spill Response Team Organization

Initially (during the first hour(s)), the spill response to any spill is the responsibility of the on-duty shift supervisor who becomes the initial Incident Commander (IC) for the oil spill emergency. Initially, the Spill Response Team is composed of the on-duty shift supervisor and the on-duty dock operator. The initial response by the on-duty facility personnel is called the Phase I Emergency (First Hour) Response. The organization of the initial spill response team is shown in Figure I-5, in Figures section. The initial Incident Commander (IC) for PTSI will coordinate spill response operations including stopping the oil flow, containing released oil, and authorizing the Primary Response Contractor to initiate response activities.

Phase II Oil Spill Response Team Organization

The Qualified Individual or the alternate Qualified Individual (QI) will be the facility On-Scene Coordinator (OSC) for PTSI and will be responsible for overall spill response management and notification of government agencies.

Once the Qualified Individual (QI):

- has arrived at the facility,
- has been apprised of the nature and extent of the spill, the current spill response activities, and developing response activities, if any, and
- has assumed the role of facility On-Scene Coordinator (OSC),

the spill response will be managed using the ICS organizational structure as shown in Figure 1-6, Spill Response Team Organization Phase II, located in Figures section. In the event of a major or catastrophic spill, the facility OSC will request assistance for oil spill management from federal and state OSC's experienced in managing oil spills. If necessary, PTSI will participate in a Unified Command as outlined in Section 1.4.2.

The important point with respect to organization is that, depending on the size of the spill and required response, either the facility OSC or the "Unified Command" is the single authority for the entire response operation.

Transition of Command Authority

Before the QI (or the alternate QI) arrives on-scene, the on-duty Shift Supervisor is the initial Incident Commander who is in charge of the spill response. When the QI arrives on the scene, he will take over management and control of the spill response organization from the on-duty Shift Supervisor and become the facility On-Scene Coordinator (OSC). To accomplish this transition, the on-duty Shift Supervisor will brief the QI on the overall response and give him sufficient information to allow informed and logical decisions to be made. The QI must announce to response personnel that he has assumed control as OSC. For shift changes and relief, a similar procedure will be used to transfer management and control between individuals acting as QI/OSC. Transfer of authority can only be made to QI's listed on the Call Out Check List.

At the Spill Response Manager's or the Unified Command's discretion, additional individuals are assigned responsibility for subsidiary sections of the response (see Figure 1-6). These individuals will have the authority to make decisions and direct response activities within their respecfive areas of responsibility.

1.4.5 Qualified Individual:

As required by federal regulations, a Qualified Individual and an altemate Qualified Individual are identified in Section 2.4 of this plan. Either the Qualified Individual, or the altemate, is available 24 hours a day and both individuals are familiar with the oil spill response plan and the responsibilities of a Qualified Individual. Either the Qualified Individual, or the alternate, has the authority to implement the plan to:

a) Activate clean-up contractors,
b) Act as liaison with government agency representatives, and
c) Authorize expenditures for oil spill response.

Both the QI and the alternate QI are given a letter (Figure 1-9, in Figures section) that specifies their authority to act as qualified individuals.

1.5 PRIMARY RESPONSE CONTRACTORS

1.5.1 Clean Rivers Cooperative

a) Contact Clean Rivers Cooperative at the following numbers:

(503) 220-2040

b) Clean Rivers Cooperative has a full range of oil spill response capabilities to meet the planning criteria of OPA-90, including "shoreline protection and cleanup", "shallow water capability", Average Most Probable Discharge", "Maximum Most Probable Discharge", and "Worst Case Discharge". Clean Rivers Cooperative has received OSRO Classifications from the USCG for Levels A, B, C, D, and E for facilities in the Portland Captain of the Port Zone.

2.0 SPILL RESPONSE

2.1 DETECTION

During each and every transfer operation, a dock operator and a vessel operator are present who are the "Persons-in-Charge" as prescribed by USCG regulations. For a barge vessel, the vessel operator is called a tankerman. It is the responsibility of the dock operator and the vessel operator to continually monitor the areas immediately adjacent to the transfer operation for any visible signs of oil on the ground or on the water. At night, the dock area of the transfer and the vessel are illuminated by lights on the dock and on the vessel. These lights provide sufficient illumination for detecting oil sheens on the water during darkness. The on-duty shift supervisor monitors the pumps and the storage tank levels to prevent overfills and to detect leaks.

Even when no transfer operations occur at the dock, there is at least one dock inspection made every shift (at least once every 12 hours) in which the containment box for the oil pipe risers on the dock service platform is visually checked for leaks and spills.

Also, in the evenings, the NWNG security guard checks the property hourly for anything unusual including spilled oil.

All of the fuel oil storage tanks have electronic high level alarms to alert plant personnel of imminent overflows into the tank yard. In case of a high level in any one of these tanks, two horns are sounded, one outside the boiler building and one in the operations control room. A display panel in the operations control room indicates which tank is responsible for the alarm.

Two tanks, Tank 6 and Tank 7, have high level shut off switches to prevent overflows.

There are no mechanical or electronic devices for detecting discharges onto land or into the water from tanks, pipes, or manifolds.

2.1.1 Assessment of Spill Volume

The quantity spilled for medium or smaller spills (less than approximately 240 barrels) is determined by visual inspection and experience. For spills greater than approximately 240 barrels, the quantity of oil spilled will be estimated and verified by inventory (tank gauging) records.

The most accurate estimate of the amount of oil spilled is made by doing an accounting analysis of the oil inventory at the facility and/or on the vessel involved in the oil transfer. However, it may be necessary to more roughly approximate the volume of oil spilled at the time of detection to mobilize the necessary oil spill response resources.

One method of approximating the volume of oil spilled is based on the observing the color of the spill surface and the area covered by the spill. This method relies on the idea that the color of the spill surface is related to the thickness of the oil spill layer floating on the water surface. Figure 2-1, in the Figures section, based on work by Mackay, et. al, relates the color of the spill surface (i.e. the oil spill thickness) and the area covered by the spill to the volume of the spill. It is important to remember that silvery sheens or rainbow colors indicate thin oil layers only a few optical wavelengths thick and estimates of spill thickness based on color are only useful for fresh, thin spills. This may not be the case for No. 6 Fuel Oil spills.

Also, the visual color method is ineffective when the oil is thick enough to appear black or brown which is the case when the oil layer may be only about 2 microns thick. One micron is only about 4 one hundred thousandth of an inch. "Thick" layers that appear black or dark brown may vary considerably in thickness and most of the oil volume is located where the surface appears black or brown. Also, broken and/or irregular spill areas preclude accurate estimates of the amount of oil spilled.

In general, oil spill thickness varies within the floating oil layer and may depend on many factors including wind, wave, and current conditions, the type of oil spilled, the physical properties of the oil (including volatility, solubility, pour point, and viscosity), air and water ambient temperatures, and the time since the spill occurred (which may affect emulsification, weathering, and oxidation).

Because No. 6 Fuel Oil may form tarry lumps at ambient temperatures, may resist spreading, may tend to sink, and may soften and flow in sunlight. estimating the volume of a No. 6 Fuel Oil spill from field observations is uncertain and unreliable, at best.

2.1.2 *Prediction of Spill Movement*

Predicting the movement of an oil spill is based on the following general principles:

a) Oil will spread out into a thin layer on the surface of the water because oil and water are immiscible, and because there are no differences in density and surface tension between the oil and water. The speed at which oil will spread is dependent on many factors including oil viscosity, oil pour point, and ambient temperatures.
b) Wind will push an oil spill at approximately the rate of 3% of the wind speed in the direction of the wind.
c) Surface currents will carry an oil spill at the speed of the currents in the direction of the currents.

2.2 ACTION PLAN - FLOWCHART AND CHECKLIST

2.2.1 *Overall Response Strategy*

The plan for responding to oil spills at Portland centers on the following two phases of action:

PHASE I: EMERGENCY (FIRST HOUR) RESPONSE

- Emergency shutdown,
- Safety and spill assessment,
- Stop leakage and mitigate damages
- Notification, and
- Initial deployment of on-site containment boom.

All Phase I response is conducted by PTSI employees.

PHASE II: CONTAINMENT, CLEAN-UP, AND DISPOSAL

- Containment and/or deflection of oil (from high value properties and environmentally sensitive areas),
- Recovery and clean-up from water and shoreline, and
- Recycle and disposal of oil/water and debris.

All Phase II response is conducted by the Primary Response Contractor(s).

2.2.2 Flowsheet and Checklist

The Spill Response Operations-Flowchart (Figure 2-2, in the Figures section) and the Spill Response Operations Checklist (Figure 2-3, in the Figures section) show the sequence of actions to be followed in response to spill emergencies.

2.2.3 Estimate of Initial Response Time

The Phase I Emergency Response by PTSI employees will accomplish the one-hour response standard of OAR 340-141-0150(3)(a). The execution time between detection and launching of the on-site containment boom is estimated to be 45 to 60 minutes. Final placement and anchoring of the containment boom will be influenced by the location, nature, and extent of the spill and by weather conditions, river stage, and river current.

2.3 EMERGENCY SHUTDOWN AND DAMAGE CONTROL

2.3.1 General Emergency Shutdown Procedures

Shutdown of the pumps is accomplished by operating manual electrical on/off switches at:

a) The dock risers,
b) The tmck loading rack,
c) The blender (at the shore-end of the dock walkway),
d) Each individual pump, or
e) The operation control room (for pumps in north tank yard only)

The oil flow is stopped and pipelines are isolated by closing valves in the pump area, at the dock risers, and at the blending meters at the shore end of the dock walkway.

For pipeline or valve failures, the pipeline may immediately be evacuated by drawing suction on the pipeline from the pumps.

In case of a tank leak, the leaking tank will be emptied as quickly as possible by immediately initiating intertank transfer operations. This action will transfer oil from the leaking tank to another tank (with spare capacity), a truck, or a vessel.

2.3.2 Specific Oil Spill Mitigation Procedures:

In case of a spill, on-duty facility personnel will make every effort to mitigate or prevent any discharge of oil. These efforts include the specific procedures to shutdown affected operations. On-duty personnel will take the following actions in the event of an oil spill emergency involving an oil discharge or a potential discharge.

Discharge Scenario	On-duty Shift Supervisor	On-duty Dock Operator
Hose Failure	Shut off transfer pumps. Close all pipeline valves. Call 911, in case of injuries or fire. Evacuate in case of emergency. Complete Oil Spill Report Form. Make Calls on Call-Out Checklist. Monitor air for H2S. Launch/ operate boat to deploy oil boom. Follow directions of Qualified Individual.	Close riser valve at dock. Open oil boom storage. Feed boom into water. Assist supervisor in boat to deploy boom. Follow directions of shift supervisor.
Tank Overfill	Shut off transfer pumps. Call 911, in case of injuries or fire. Evacuate in case of emergency. Complete Oil Spill Report Form. Make Calls on Call-Out Checklist. Monitor air for H2S. Launch/ operate boat to deploy oil boom. Follow directions of Qualified Individual.	Close valves to tank and all pipeline valves. Open oil boom storage. Feed boom into water. Assist supervisor in boat to deploy boom. Follow directions of shift supervisor.
Tank Failure	Shut off transfer pumps. Initiate transfer to spare tank or vessel. Call 911, in case of injuries or fire. Evacuate in case of emergency. Complete Oil Spill Report Form. Make Calls on Call-Out Checklist. Monitor air for H2S. Launch/ operate boat to deploy oil boom. Follow directions of Qualified Individual.	Close valves to tank and all pipeline valves. Open oil boom storage. Feed boom into water. Assist supervisor in boat to deploy boom. Follow directions of shift supervisor.

Piping/Manifold Rupture or Leak	Shut off transfer pumps. Initiate evacuation of affected pipeline. Call 911, in case of injuries or fire. Evacuate in case of emergency. Complete Oil Spill Report Form. Make Calls on Call-Out Checklist. Monitor air for H2S. Launch/ operate boat to deploy oil boom. Follow directions of Qualified Individual.	Close all valves to isolate pipeline/manifold. Open oil boom storage. Feed boom into water. Assist supervisor in boat to deploy boom. Follow directions of shift supervisor.
Fire or Explosion	Shut off transfer pumps. Close all pipeline valves, if possible. Call 911, in case of injuries or fire. Evacuate, if necessary Use fire extinguisher, if safe to do so. Complete Oil Spill Report Form. Make Calls on Call-Out Checklist. Monitor air for H2S. Launch/ operate boat to deploy oil bootn. Follow directions of Qualified Individual.	Close riser valve at dock, if possible. Evacuate, if necessary Use fire extinguisher, if safe to do so. Open oil boom storage. Feed boom into water. Assist supervisor in boat to deploy boom. Follow directions of shift supervisor.
Pump Failure	Shut off transfer pumps. Call 911, in case of injuries or fire. Evacuate in case of emergency. Complete Oil Spill Report Form. Make Calls on Call-Out Checklist. Monitor air for H2S. Launch/ operate boat to deploy oil boom. Follow directions of Qualified Individual.	Close all pipeline valves. Open oil boom storage. Feed boom into water. Assist supervisor in boat to deploy boom. Follow directions of shift supervisor.

In addition to the equipment shutdown and the mitigation steps outlined above, the on-duty personnel will also make efforts for containment on land including digging trenches to divert or channel spilled oil and building berms and/or plugging storm drains to contain a spill and to mitigate spill damages. Storm drains may be quickly plugged by placing plastic sheeting over the grated opening and shoveling dirt or sand on top of the plastic to hold it down.

2.4 NOTIFICATION

ALL SPILLS REQUIRE REPORTING

2.4.1 Call-Out Checklist

After a spill, the on-duty shift supervisor will immediately call:

911 IN CASE OF INJURY, FIRE OR EXPLOSION.

After shutting off all pumps, closing all valves, and assessing details of the spill listed on the Oil Spill Report Form, the on-duty shift supervisor will call the following people:

1. Facility Manager:

Title	Name	Office		Mobile	Home
Terminal Manager/QI	Kevin Buffum			206-979-3918	425-338-2316
Alt QI	Mike Curry	206-628-0051		206-423-9955	
Alt QI	Jack Wild	503-240-3456		206-255-5010	360-263-5330
Alt QI	Tina Garrett	503-240-3452		503-572-9355	503-283-6841

If spill involves Koppers Industries Portland Coal Tar Pitch Pipeline then notify:
Manager TJ Turner 503-286-3681

2. Primary Response Contractor(s):

Clean Rivers Cooperative: (503) 220-2040

3. NWNG, Security (at facility gate): (503) 286-5250

Immediately, upon receiving the call and details about the spill, the QI, or the designated altemate QL will call the following:

1. USCG National Response Center (NRC) at: 1-800-424-8802 or (202)-267-2675.

2. Oregon Emergency Response System (OERS) at: 1-800-452-0311 or (503)-378-6377.

3. Local USCG Marine Safety Office at: (503) 240-9301.

4. Northwest Natural Gas Company:
   Sandi Hart at Office: ext. 4322 (503) 226-4211
   or distribution dispatch night supervisor: (503) 226-4211

5. Corp. of Engineers:

Corp. of Engineers	Office:	(503) 221-4188
Bill Switzenberg, Shipyard Chief	Office:	(503) 326-5636
Brandon Smith, Envir. Coord	Office:	(503) 326-2477

6. Portland Fire Department: 911
7. Police and State Patrol 911
8. Hospital and Evacuation Notice 911

9. EPA Region X (206) 553-1263

If there is no answer at any of these numbers, call the next number, and after 5 minutes, try calling the unanswered number again.

Pacific Terminal Services, Inc.
910 SW Spokane Street
Seattle, WA 98134

Pacific Terminal Services, Inc.
7900 NW St. Helens Road
Portland, OR 97210

Title	Name	Office		Mobile	Home
Manager/QI	Kevin Buffum			206-979-3918	425-338-2316
Alt QI	Mike Curry	206-628-0051		206-423-9955	
Alt QI	Tina Garrett	503-240-3452		503-572-9355	503-283-6841
Alt QI	Jack Wild	503-240-3456		206-255-5010	360-263-3221
NAME	**JOB DESCRIPTION**	**RESPONSE ROLE**	**RESPONSE TIME**	**WORK TELEPHONE**	**HOME TELEPHONE**
Burt Nye	Operator	1st Hr-Phase I	On-duty	(503) 286-5321	(360) 574-4950
Gary Bucknum	Operator	1st Hr-Phase 1	On-duty	(503) 286-5321	(503) 366-7977
Tracy Wild	Operator	1st Hr-Phase 1	On-duty	(503) 286-5321	(360)-448-7428
John Overly	Operator	1st Hr-Phase I	On-duty	(503) 286-5321	(503) 774-9295
Mark Flower	Operator	1st Hr-Phase I	On-duty	(503) 286-5321	(503) 777-4124
Larry Lamb	Operator	1st Hr-Phase I	On-duty	(503) 286-5321	(503) 492-5100 x126
Bruce Staneart	Operator	1st Hr-Phase 1	On-duty	(503) 286-5321	(503) 234-2875

Additional Telephone Numbers for Notification

Oregon LEPC:	Area Evacuation:	(503) 378-3473
National Weather Service:	Weather Report:	(503) 281-1911
	River Information:	(503) 249-0666
Federal Aviation Administration:	Air Traffic Control:	(503) 326-2557 or (503) 284-1711

Utility Water Users (Downriver) Notification

Coastal Chemical, Deer Island	(503) 397-2225
Boise Cascade, Scappoose	(503) 397-2900
Oregon Steel, Rivergate	(503) 286-9651

2.4.2 Notification

When a spill occurs, the emergency shutdown of any fuel oil transfers and the containment of the spill are the first priorities of this plan. Notification, or calling for assistance, is essential to containing large spills. Without proper and timely notification, any spill response may be seriously hindered or delayed. Proper notification requires communicating the details that are known about the spill. To facilitate assessing details about the spill, to the extent that details are known, the Oil Spill Report Form (Figure 2-4, in the Figures section) should be used before the nofification calls are made.

Operators of oil facilities are required to report releases, discharges, or spills of oil. The purpose of the reporting requirement is to ensure that the ODEQ and local emergency response personnel are aware of all accidents that may threaten human health or the environment.

Oil spills in any amount outside of secondary containment (onto the ground, into the ground, or onto surface waters) and oil spills exceeding 10 gallons inside of secondary containment must be reported immediately by calling local authorities and the ODEQ regional office. In addition, if the released oil is in the water or could result in exposure to persons outside of the boundaries of the facility, the National Response Center and the Oregon Emergency Management must be notified immediately. Spills must be reported regardless of whether or not public health or the environment is threatened.

2.4.3 Spill Categorization

The main objective in responding to an oil spill is to minimize environmental and property damage. To meet this objective, it is important that those people called by PTSI have an understanding of the scope of the spill and of the sensitive areas and high value properties which are at risk of being damaged. With this understanding, the efforts of those people, who are first to respond, will be most helpful in minimizing damage. The on-duty dock operator, who will likely be the first person on the scene, must assess the size of the spill, the amount that the spill has spread, and the weather conditions. These details can then be transferred to others, especially the Primary Response Contractor(s), when the on-duty shift supervisor or the facility manager make the required calls on the call-out checklist.

To be consistent with the Oregon State Oil and Hazardous Materials Spill Contingency Plan, spills are categorized as follows:

	Volume spilled on water or on land	
MINOR	Less than 100 gallons	< 2.4 barrel
MEDIUM	100 to 10,000 gallons	< 240 barrels
MAJOR	10,000 to 1,000,000 gallons	< 24,000 barrels
CATASTROPHIC	More than 1,000,000 gallons	> 24,000 barrels

The USCG has other, less quantitative means to categorize spills and to judge the threat to the public health and welfare.

For all except minor spills, the USCG may be the lead responder and may at its discretion activate the federal Regional Response Team. Major or catastrophic spills require the formation of a Unified Command involving PTSI, the USCG, and the ODEQ to manage the response.

2.5 PERSONNEL

2.5.1 PTSI Personnel - Job Descriptions

Additional information regarding the job descriptions and responsibilities is contained the Field Operations Guide (FOG) published by the US Coast Guard.

a) Facility Manager, Spill Response Manager, Facility On-Scene Coordinator and Qualified Individual:

Responsible for equipment readiness and maintenance, including radios.
Responsible for Oil Spill Training and Drills.
Directs overall response effort as facility On-scene Coordinator (OSC) and QI.
Decides operating priorities.
Authorizes use of response resources.
Releases public information.
Acts as liaison with local, state and federal authorities.
Complies with all laws and regulations.
Participates in Unified Command for major spills.
Chairs daily strategy meetings on response operations.
Makes calls on Call-Out Checklist.
Assumes role and responsibilities of Spill Operations Manager.
Training: 40 hrs Oil Spill plus 8 hr's ICS and 8 hrs annual Oil Spill refresher.

b) On-duty Shift Supervisor: (4) Employees

Shuts off all pumps and closes all valves.
Directs efforts to stop the release of oil.
Directs defensive actions to contain spilled oil and to mitigate spill damages.
Calls 911 in case of injury, fire or explosion.
Evacuates the facility in case of emergency, if necessary.
Coordinates rescue activities, if necessary.
Completes the Oil Spill Report Form.
Makes calls on Call-Out Checklist.
Launches and operates boat to deploy containment boom.
Responsible for safety during first hour response work.
Authorizes work of Primary Response Contractor, if necessary.
Follows directions of Operations or Spill Response Manager.
Training: 8 hrs annual Oil Spill refresher.

c) On-duty Dock Operator and Maintenance: (4) Employees

Responsible for spill detection at dock during transfer operations.
Closes valves at dock riser and blender.
Opens oil boom storage boxes and feeds boom off dock.
Assists shift supervisor in boat to deploy containment boom.
Take actions to limit sill and mitigate damages as directed by IC.
Follows directions of shift supervisor or superiors as required.
Training: 8 hrs annual Oil Spill refresher.

d) Alternate Ql and Safety Officer:

Back-up Spill Response Manager.
Formulates containment, clean-up, and disposal plans.
Responsible for health and safety of workers and public.
Identify health and safety hazards.
Prepares Site Health and Safety Plan.
Informs all spill response personnel of health and safety requirements.

e) ICS Plarming Coordinator:

Coordinates spill surveillance activities and spill movement predictions.

Identifies threatened environmental and high value economic resources.
Recommends protection priorities.
Conducts monitoring and sampling.
Determines quantities spilled and recovered.
Develops disposal and treatment plans.
Assists with natural resources damage assessment.
Reviews and update Oil Spill Plan
Updates Call-Out Checklist
Training: 40 hrs Oil Spill plus 8 hrs ICS and 8 hrs annual Oil Spill refresher.

f) ICS Operations Coordinator:

Spill surveillance and movement predictions.
Monitoring and sampling.
Damage assessment.
Implement response plans.
Coordinate containment, clean-up, and disposal.
Coordinate health and safety plans.
Oversee wildlife rescue.
Training: 40 hrs Oil Spill plus 8 hrs ICS and 8 hrs annual Oil Spill refresher.

g) ICS Logistics Coordinator:

Facilities.
Transportation.
Establishes and maintains communications.
Equipment maintenance.
Food, fuel and supplies.
Medical services.
Training: This is a support position and not requiring specific oil spill training.

h) ICS Financial Coordinator/Accounting Assistant:

Cost control tracking of labor and equipment used in response efforts.
Response documentation.
Accounting.
Contract Administration.
Office management and services.
Training: This is a support position and not requiring specific oil spill training.

i) Public Relations:

Acquires and disseminates information.
Primary contact with news media.
Coordinates with other public information representatives.
Training: This is a support position and not requiring specific oil spill training.

2.5.2 Contract Personnel

Refer to Appendix A for the Clean Rivers Cooperative Emergency Procedures and Resource Guide.

The Primary Response Contractor is classified by the USCG as a Class A-E Oil Spill Response Organization (OSRO) for River and Canal Environments and Inland and Nearshore Environments. In determining this classification, the USCG reviewed the PRC's resources and records. During the review, the USCG verified personnel lists, telephone numbers, evidence of training and response time capabilities of sufficient personnel available to the PRC for spill response work. These personnel lists are on file with the USCG, are maintained by the PRC and are incorporated into this plan by reference.

2.5.3 Pre-positioning

A dock operator and a shift supervisor are present at all times and they, therefore, are effectively pre-positioned to stop operations, notify appropriate people, call for assistance, and begin response within one hour of detection pursuant to OAR 340-141. Oil transfers at the facility are boomed. Additional boom is available at the facility.

2.6 RESPONSE EQUIPMENT

Facility oil spill response plans must identify enough oil spill response equipment to respond to the larger of the EPA Worst Case Discharge, the USCG Worst Case Discharge or the ODEQ Worst Case Spill Planning Volumes and must specify how the required equipment will be available for use in case of a spill.

For PTSI, the equipment used for oil spill response falls into the following two categories:

- Facility equipment owned by PTSI
- Primary Response Contractor (PRC) equipment owned and operated by the PRC.

There is also other privately owned contractor and cooperative oil spill response equipment and federally owned oil spill response equipment. Even though, in the event of a worst case spill, the USCG (FOSC) will command the use of all available response resources, regulations prohibit owners and/or operators of facilities from relying on govemment spill response equipment or privately owned equipment that is not available to the facility by contract or Letter of Intent.

2.6.1 Equipment Lists

Table 3, in the Tables section, lists response equipment permanently stored on-site at the Portland facility for immediate deployment in case of a spill. This equipment will be used to respond to the Average Most Probable Discharge and small spill scenarios.

Appendix B lists response equipment available for deployment by Primary Response Contractor(s) which will be used to respond to the Maximum Most Probable Discharge, the medium spill scenario, and to the Worst Case Discharge. The PRC owned equipment is summarized below.

Table 3 and Appendix B list the type, quantity, age, location, maintenance schedule, and availability of oil spill response equipment including oil containment (boom), recovery (skimmers), storage, and communication equipment.

2.6.2 Available Oil Containment (Boom) Equipment

Initial boom deployment must be equal to 4x the length of the largest vessel that transfers at the facility within 1 hour. An additional amount of boom equal to the length required in the first hour must be available onsite within 2 hours. The largest vessel that transfers oil at the facility is 350 feet.

The Worst Case Discharge planning distance extends downriver 35 miles (refer to Appendix J). The sensitive areas within this distance are based on the ODEQ maps (refer to Appendix D) which list the requirement for 12000 feet of containment boom to protect the key sensitive areas within the planning distance. For planning purposes, this amount of containment boom must arrive on-scene in 12 hours, and be deployed within 15 hours, of spill detection. The DEQ containment benchmark requires 35,000 feet of containment boom on scene within 12 hours.

PTSI has 2,200 feet of containment boom at the facility. The PRC has the following oil containment boom lengths which can be at the facility within 12 hours:

OIL CONTAINMENT BOOM

Location of Boom	Length	Response Time
In Water	1,200 feet	Deployed
Facility	1,000 feet	1 hour
CRC Portland	11,200 feet	2 hours
OTB Portland	2,400 feet	2 hours
CRC Longview	6,300 feet	2 hours
CRC Clatskanie	6,300 feet	3 hours
CRC Wauna	3,300 feet	3 hours
CRC Cathlamet	5,100 feet	3 hours
CRC Skamokawa	2,500 feet	3 hours
CRC Tongue Point	5,100 feet	3 hours
CRC Astoria	9,900 feet	3 hours
TOTAL	**54,300 feet**	

.2.6.3 *Available Recovery Equipment*

Based on the nameplate capacity of PRC equipment and assuming 24 hours of uninterrupted operation, the maximum amount of oil that can be recovered in a 24-hour period is 406,705 barrels. In reality, field performance will be lower than this theoretical maximum because of equipment downtime (for maintenance, refueling, re-positioning, and unloading of recovered oil), available daylight, weather conditions, and emulsification of recovered oil and water. Because of these factors, the nameplate capacity of response equipment is de-rated for planning purposes. Based on a 20% equipment efficiency factor for determining plan adequacy, the effective daily recovery rate is 81,341 barrels per day.

The worst case discharge is 80,000 barrels.

The PRC has the following on-water oil recovery capabilities:

Primary Response Contractor	Nameplate Recovery Capacity (BPD)	Effective Daily Recovery Rate	Response Time
CRC Portland	220,980	44,196	1.0 hours
CRC Longview	86,740	17,348	3.0 hours
CRC Cathlamet	18,600	3,720	3.0 hours
CRC Astoria	80,385	16,077	3.0 hours
TOTAL	406,705	81,341	

The 6 hour standard is 10% of the worst case discharge or 8,000 barrels.

The 12 hour standard is 15% of the worst case discharge or 12,000 barrels.

The 24 hour standard is 20% of the worst case discharge or 16,000 barrels.

The 48 hour standard is 25% of the worst case discharge or 20,000 barrels.

2.6.4 Available Interim Storage Equipment

In addition to the use of OTB barges for interim storage the PRC has the following interim storage capabilities:

Primary Response Contractor	Location	Type	Interim Storage Capacity (Barrels)	Response Time
CRC	Portland	Tidewater Barges	10,000	2.0 hours
PTSI	Portland	Facility Tankage	20,000	2.0 hours
CRC	Portland	Tankage	120,000	6.0 hours
CRC	Astoria	Tankage	80,000	8.0 hours

The storage benchmark is 5x the recovery benchmark.

Time	Recovery	Storage
6 hours	8,000 bbls	40,000 bbls
12 hours	12,000 bbls	60,000 bbls
24 hours	16,000 bbls	80,000 bbls
48 hours	20,000 bbls	100,000 bbls

Because of their mobility, the effective interim storage capacity of several vacuum trucks used together with a skimming device exceeds the simple nominal capacity of the trucks. For example, if three vacuum trucks are used together to support a single skimming device, one truck may be filling while one truck is traveling to an oil recycling facility, while the third truck is being unloaded at the recycling facility. In this way, the nominal storage capacity of the three trucks may be multiplied as much as sixfold in a 24-hour period.

2.6.5 Response Times

The ODEQ regulation (OAR 340-141-0150) requires planning for initial deployment of response resources at the site of the spill within one hour of spill detection. This planning standard is met at the Portland facility by on-duty personnel using dedicated equipment (boom and boat) on-site at the facility.

For computing response times for planning purposes for equipment that is located off-site, EPA and USCG require travel times for response equipment to be based on the distance between the equipment storage location and the facility at the following speeds:

On-water speed:	10 knots
Overland speed:	35 mph.

The total response time for equipment to arrive on-scene must include allowances for notification and mobilization. The highway travel times to the PTSI Portland facility from the locations where the PRC has response equipment located are:

Response Time Calculation

To Facility From	Notification Allowance (hours)	Allowance for Mobilization (hours)	Approximate Travel Distance (miles)	Travel Time (at 35 mph) (hours)	Nominal Response Time
Portland	0.5	0.5	10	0.3	1.3 hours
St. Helens	1.0	0.5	25	0.7	2.2 hours
Rainier	1.0	0.5	45	1.3	2.8 hours
Tacoma	1.0	0.5	135	4.3	5.3 hours
Seattle	1.0	0.5	175	5.0	6.5 hours

Note that for worst case discharge response planning, notification for, and authorization to mobilize and deploy, Tier 1 response resources must be provided through the Qualified Individual, or the alternate Qualified Individual, to the PRC within 30 minutes of spill detection.

2.6.6 *Federal Response Equipment Requirements*

The EPA requirements for spill response resources are as follows for the small discharge, medium discharge, and worst case discharge planning scenarios:

Small Discharge Planning Scenario

Response Time:	On-scene within 2 hours of detection.
Small Discharge Volume:	50 barrels.
Containment Boom:	1,000 feet plus means of deployment.
Effective Daily Recovery Rate:	50 barrels per day.
Nameplate Recovery Rate:	250 barrels per day.
Interim Storage:	100 barrels.

Medium Discharge Planning Scenario

Response Time:	On-scene within 6 hours of detection.
Medium Discharge Volume:	857 barrels.
Containment Boom:	6,000 feet plus means of deployment.
Effective Daily Recovery Rate:	429 barrels per day.
Nameplate Recovery Rate:	2,145 barrels per day.
Interim Storage:	857 barrels.

Worst Case Discharge Planning Scenario

For worst case discharge planning, the EPA requires response resources to be brought to the facility in "tiers" as follows:

Tier 1:	12 hours or less
Tier 2:	36 hours or less
Tier 3:	60 hours or less.

The amount of response resources to arrive on-scene for each tier is computed as follows:

Worst Case Discharge Planning Volume: 80,000 barrels

Three different oil products, classified by federal rules as Group III, Group IV and Group V, are stored at the facility. All are persistent oil products. Group III and Group IV oils are lighter than water and may be recovered on the water or on the shoreline. Group V oils are heavier than water and will most likely sink, if spilled.

On-water Recovery Resources

To account for differences between the oil groups in natural dissipation and emulsification, the calculation of the on-water response resources for the Worst Case Discharge planning volume following the EPA guidance were performed two times, once for each of the two lighter-than-water (floating) groups, Group III and Group IV. For each calculation, the volume of the largest tank storing the subject oil group was used as the basis of the calculation. These calculations are summarized as follows:

Requirements for On-water and On-shore Response Resources for Worst Case Discharge

		Group III Oil	Group IV Oil
Geographical Area		Inland	Inland
Capacity of Largest Tank for each Group (Barrels)		60,000	80,000
Oil Lost by Natural Dissipation		30%	10%
Floating Oil Recovered		50%	50%
On-shore Oil Recovered		50%	70%
Recovery Planning Volumes On-water (Barrels)		30,000	40,000
Recovery Planning Volumes On-shore (Barrels)		30,000	56,000
Emulsification Factor		2.0	1.4
On-water Resource Mobilization Factor	Tier 1	0.15	0.15
	Tier 2	0.25	0.25
	Tier 3	0.40	0.40
On-water Recovery Capacity (BPD)	Tier 1	9,000	8,400
	Tier 2	15,000	14,000
	Tier 3	24,000	22,400
Shoreline Clean-up Volume (Barrels)		60,000	78,400

Group III requirements are the more stringent requirements for on-water resources and Group IV requirements are the more stringent for shoreline clean-up.

The on-water response requirements are shown graphically in Figure 2-5, in the Figures section.

The EPA requirement for interim storage is two times the effective daily recovery rate required on-scene unless the facility owner or operator demonstrates that less interim storage is warranted. For planning purposes, the availability of commercial oil barges is more than sufficient to meet the interim storage requirements.

2.6.7 State Response Equipment Requirements:

The ODEQ uses the Contingency Plan Review "Benchmarks" for guidance to evaluate the adequacy of facility oil spill contingency plans. The "benchmark" guidelines allow a "stepped" response similar to, but at difference levels than, the "tiered" response required by the federal regulations. For the worst case spill planning volume for the facility, the ODEQ "benchmark" guidelines are shown as a solid line in Figure 2-5 for on-water recovery equipment response times.

For containment boom, the ODEQ "benchmark" guidelines are as follows:

- Four times the length of the longest vessel at the facility kept on site at all times.
- An additional amount equal to four times the length of the longest vessel to be on-site within 2 hours of spill detection.
- 35,000 feet or enough boom to protect priority shorelines affected within the first 24 hours to be on-site within 12 hours.
- Sufficient boom to protect sensitive areas on-site within 24 hours.

The length of the longest vessel routinely moored at the facility is approximately 350 feet. PTSI has installed "permanent" barrier boom under the dock and will deploy boom around each vessel transferring petroleum products at the facility.

The ODEQ "benchmark" guideline for interim storage is five times the recovery benchmark volume for a given time period.

2.6.8 Pre-positioning

Pacific Terminal Services Inc.'s containment boom and deployment boat are all pre-positioned at Portland for immediate use to comply with OAR 340.141.0160.

2.7 COMMUNICATIONS

During nonnal transfer operations, the primary communications are direct visual and verbal contact between the facility dock operator and the barge tankeman. In addition, handheld, battery operated, portable UHF radios are used for communications within the tankfarm, between the tankfarm and the dock, and between the facility and the vessel that is being loaded or discharged. Typically, radios are available for the shift supervisor, the dock operator, and the vessel operator. These radios are "intrinsically safe" and meet Class 1, Division I, Group D requirements as required by USCG regulations.

The frequencies used for the radio communications are 467.9125 or 467.7625 mHz with a digital private line code of 065. The approximate range of the radios is 1 to 2 miles depending on potential obstmctions such as buildings.

During spill response, the primary communications for facility personnel will be by using facility radios. These radios would be used between the tankfarm (shift supervisor) and the dock (dock operator), between the dock and the vessel (tankerman), between the dock and the response work boat, or between the vessel and the work boat.

Altematively, communications will be made by telephone at the facility or by telephones available to the facility manager and spill response manager at their homes, at their offices, or in their cars (portables).

For minor spills and for the Phase I Emergency (First Hour) Response, these communications will be appropriate. In the event of a major spill, communications will be established and coordinated through the Spill Communications Center and the primary and altemate communications equipment will be fumished by the Primary Response Contractor(s), a USCG approved OSRO.

2.7.1 Communication Procedures

Oil spill response activities will be directed by the On-Scene Coordinator or the Unified Command from the Central Command Post. Communication between PTSI personnel, including between the On-Scene Coordinator and others on the response team will be face-to-face, by telephones, or by hand-held radios. The managers of Primary Response Contractor operations will be given facility radios to use to communicate with the Central Command Post. The Primary Response Contractor will direct his personnel with the contractor's communication devices. Other organizations including the primary response contractor(s), the ODEQ, and the USCG are all expected to furnish their own radios for their internal communicafions during spill response operations.

2.7.2 Integrated Communications

To integrate communication, the facility OSC and the federal and state OSC's will talk face-to-face at the Central Command Post (or elsewhere) or by telephone. This communication procedure will encourage the central direction, management, and control of spill response activities by the OSC and/or the Unified Command.

The preferred communication method is face-to-face verbal communication. The second method is either portable telephones or telephones that are available throughout the facility. Telephones should be used, to keep radio airways, the third communication method, open as much as possible.

2.8 SPILL RESPONSE OPERATIONS SITES

The PTSI Portland facility will serve as the site for the spill response Central Command Post, the Central Communications Post, and the staging areas for personnel and equipment. If a widespread, major spill must be monitored over a long period, off-site, mobile office trailers equipped with telephones, electricity, and shower facilities for spill response personnel may be strategically located along the lower Columbia River depending on the spill migration. If necessary, off-site operations may use portable generators for electrical power, cellular telephones for communications, rented portable toilets for restrooms, and bottled water for drinking. The Primary Response Contractor(s) will mobilize these temporary facilities, if they are necessary.

2.8.1 Central Command Post

The PTSI Portland facility will be used as the Central Command Post. The Central Command Post, once established, will remain the only central command post for spills originating from PTSI unless the On-Scene Coordinator or the Unified Command decides that the Central Command Post must be moved to a different location to facilitate spill response operations. The Central Command Post is the location where spill response decisions and action orders will be made or given. Any other command posts, such as field operation command posts for off-site spill response activities, including surveillance, will be subsidiary to the Central Command Post and will be established at the direction of the On-Scene Coordinator or Unified Command. Secondary command posts may be necessary for operations at environmental impact areas far from the facility.

In the event of a minor or major oil spill, the office building at the facility will be used as the Central Command Post. The facility office is centrally located in the facility and contains a meeting room, telephones, and restrooms/change rooms. In the event of a catastrophic oil spill, mobile office trailers may be rented for additional office space. The trailers will be located on site and supplied with telephone lines, electricity, bathroom facilities, and water. If needed, an additional trailer will provide shower and changing facilities for oil spill response personnel.

2.8.2 Central Communications Post

The Central Communication Post is the facility office building from which two-way radio communications with the Incident Commander, the spill response team, and operating and maintenance departments can be coordinated. The office is equipped with a facsimile machine, copier, and computer. In the event of a catastrophic oil spill, an additional office trailer may be rented for use as a media/communications trailer close to the main office building.

2.8.3 Equipment and Personnel Staging Area

Figure 1-3, Facility Layout, in the Figures section, indicates the proposed personnel and equipment staging area(s) in the facility for use in the event of a release. The areas shown are large open paved areas and are suitable for staging personnel and equipment. This space is more than ample for equipment and personnel staging and interim storage of oily debris, if necessary, as described in Section 3.3.4. The "rock

dock" at south, upstream comer of the facility may be used, subject to the permission of NWNG.

In addition, to staging areas at the facility, there are numerous access points from the pier structures of the Port of Portland.

2.9 SIMULTANEOUS AND PERIPHERAL PROCEDURES

2.9.1 Simultaneous Emergencies

The on-duty Shift Supervisor is designated as the Incident Commander by the Oil Spill Contingency Plan. This individual is responsible for coordinating the response to simultaneous emergencies, such as a fire or other emergencies.

2.9.2 Evacuation Plan

The fuel oil handled and stored at the facility is characterized as a combustible liquid and it has a low volatility and high flash point (greater that 150 degrees Fahrenheit). Consequently, except for the theoretically possible presence of dissolved hydrogen sulfide, any vapors from the fuel oil pose very low hazard to facility employees and/or the surrounding community and therefore, any evacuation of the facility or the surrounding community is not likely to be necessary because of a fuel oil spill.

In case of a fire involving the oil storage and handling equipment, an evacuation of the facility area affected may be required. Figure 2-6, Evacuation Diagram, in the Figures section, shows evacuation routes and assembly area at the facility.

The front gate shall be the primary emergency evacuation point and the shack on the rail spur on the south side of the property shall be the altemate evacuation assembly point. Refer to Figure 2-6.

2.9.3 Fire and Explosion Control and Rescue

PTSI will depend on the Portland Fire Department for support in the event of a fire not manageable by facility personnel.

For small fires, extinguishable with a hand held fire extinguisher PTSI personnel may attempt to put out the fire with one of the fire extinguishers at the facility. The Senior Shift Supervisor will function as the Fire Fighting Coordinator to assist the Portland Fire Department.

Operational Instructions for Dry Chemical Type Fire Extinguishers

1. Place the extinguisher horizontally on the ground, and roll the extinguisher back and forth a few times to loosen the chemicals inside,
2. Pull the safety pin at the top of the actuating cylinder and activate the fire extinguisher by depressing the red plunger,
3. Stand approximately 10 feet away from the fire, and
4. Squeeze the grip of the nozzle on the hose reel and apply the dry chemical(s) to the base of the fire using short burst and a sweeping motion.

Fire suppression and/or rescues from fires or explosions should not be attempted without proper training and equipment. In the event of a large or unmanageable fire, the facility personnel will:

1. Move upwind or cross-wind to a safe distance away.
2. Immediately call 911.

2.9.4 Natural Disasters

Earthquakes

Earthquakes occur without warning and may cause secondary fires, toxic gas releases, and flooding. External assistance is not likely following an earthquake. Personnel should stay put until motion stops and seek shelter under desks or in doorways. Depending on the degree of damage, personnel may be asked to exit the facility after an accounting is made for missing persons. In such a case, persons should leave in an orderly fashion. If the earthquake produces no apparent damage, the Incident Commander will check with operating personnel and have the facility personnel perform site assessments prior to resuming operations.

Floods

Flood warnings will come from the National Weather Service. Post-earthquake flooding could trigger an immediate facility evacuation.

2.9.5 Traffic and Access Control and Facility Security

Site security is maintained by the NWNG Security Guard. NWNG Security personnel will control access to the facility at the facility gate. Roads into the plant must be kept clear to allow passage of emergency vehicles. Entry into spill response areas will be controlled by the gate guard during a spill response emergency. For any emergency that requires evacuation, re-entry without authorization from the Incident Commander will be prohibited. Free re-entry is allowed only after the oil spill site has been cleaned up and decontaminated and air monitoring by the Safety Officer is complete.

If necessary, the Federal Aviation Administration (FAA) will be contacted to control air traffic over the spill area. Such control may be necessary to maintain safe air travel for surveillance flights, commercial air planes, and news agencies. The FAA traffic control telephone number is listed in the Logistic Resources, Section 8.0.

Street traffic control will be maintained by the Portland Police Department, as required. Marine vessel traffic will be controlled by the USCG, as required.

If evacuation of the facility and/or the surrounding community is required, PTSI will request assistance from local support agencies for evacuation and traffic control. The 911 system coordinates the efforts of emergency services in the Portland area.

2.9.6 Emergency Medical Treatment and First Aid

Facility personnel who receive minor injuries may receive First Aid from trained personnel at the incident scene.

For medical emergencies such as unconscious victims, serious injuries not treatable by first aid, gaseous inhalation, or unknown injuries, call 911 to reach the Portland Fire Department.

Administer First Aid/CPR if properly trained and when it is safe to do so.

Rescue and evacuation services, if necessary, will be performed by the Portland Fire Department and/or the USCG.

3.0 CONTAINMENT, CLEANUP, AND DISPOSAL

3.1 CONTAINMENT AND REMOVAL METHODS

Once spilled onto water, oil disperses naturally. Spilled oil spreads out into a thin layer on the water surface and is transported by wind, current, and tidal movements. Some oil dissolves into the water and some evaporates into the air. These processes are accelerated by vigorous wave action. Finally over time, spilled oil "weathers" and degrades by the process of oxidation. Heavy fuel oil does not dissipate appreciably by these mechanisms. Rather than the spilled volume decreasing with time, wave action tends to emulsify No. 6 fuel oil with water. Emulsification expands the volume of oil that must be recovered and makes separation of the oil and water difficult. Most spilled No. 6 fuel oil will eventually wash up on the shoreline if it is not recovered on the water. The time required for this to occur depends on its drift and proximity to land.

The spill response efforts involve containing the oil (on the water and on the shoreline) and then mechanically picking it up. The efficiency of containment and mechanical recovery devices is limited by many factors including access, waves, wind, and currents.

3.1.1 Surveillance

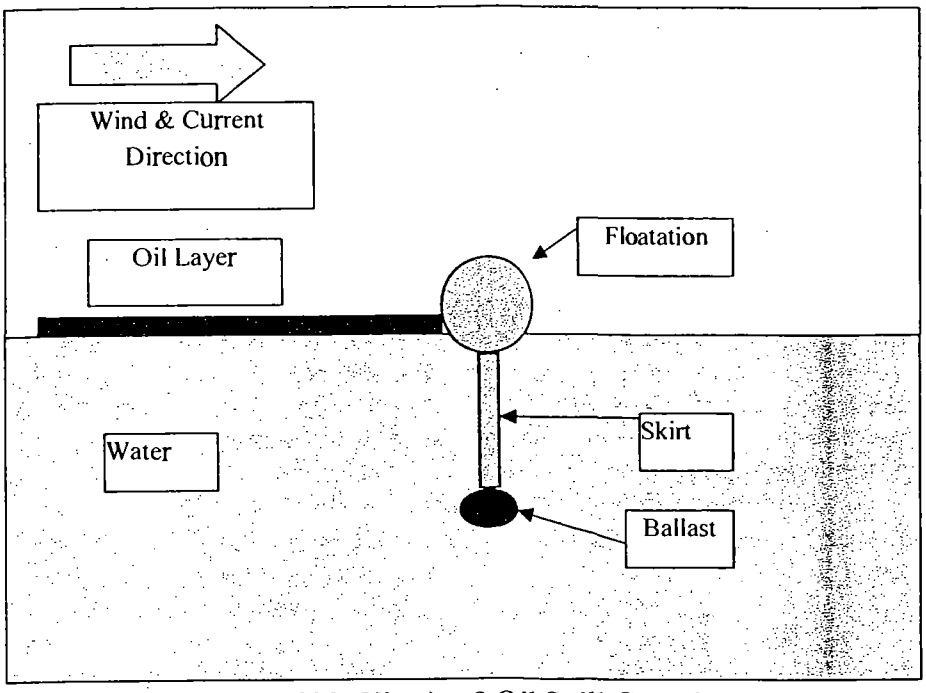
Any spill that escapes containment in the area of the facility requires surveillance to evaluate the spread of the spill and to direct containment and recovery operations. Helicopters are available through the Primary Response Contractor(s) for such surveillance, if necessary. Helicopters offer flexibility in surveying the intricate shoreline of the Willamette and Columbia Rivers. Surveillance trips must be well planned with the help of the aircraft pilots to be safe and effective. Accurate maps or charts are required to record the location of the spill. In addition, wind and current forecasts can be helpful in deploying resources to priority locations for containment, deflection, or clean-up.

On all but minor spills, National Oceanic and Atmospheric Administration (NOAA) persormel from Sand Point, Seattle, can be used for surveillance at the request of the USCG and others. NOAA personnel are experienced at spill surveillance, especially aerial reconnaissance, as well as at predicting spill movements. The NOAA contact in Seattle is Sharon Christofferson at (206) 526-6829.

3.1.2 Containment On Water

Oil Booms

Containment of spilled oil can be accomplished using floating booms constructed of flotation material with a skirt held vertically in the water by a ballast or weight as depicted below:



Cross Section (Side View) of Oil Spill Containment Boom

For oil containment boom deployment from a dock or shoreline, all personnel involved must wear USCG approved personal flotation devices. Two-way radio communication between work boat operators and personnel moving the boom from storage on shore or on a dock is essential to minimize the risks of injury, damage, or twisting of the boom during deployment.

To tow an oil containment boom into position, one end of the boom must be securely tied to the boat using a tow bridal or a towing bit on the boat. Tying the boom to an off-center stem cleat makes steering the boat very difficult. The work boat operator must adjust for wind and current which may place great strains on the boat and boom being towed. To limit drag on the boat and the boom, boom may be towed in 500 foot sections. Once in place, each length of boom may be joined to another using matching end connectors.

The boom may be held in position by using anchors (with buoys) or by being tied to dock pilings or the shoreline. If the shoreline or dock pilings are used, one end of the boom should be secured there first and then the other end positioned with anchors and buoys. The boom may also be anchored to stay properly positioned away from a dock, a vessel, or the shoreline, or to form a pocket for collecting and recovering floating oil.

Booms anchored to the bottom or secured to the shoreline or dock pilings must be tended frequently to be sure that they are floating freely and that they are not submerged or held down by anchors, hung-up on pilings, or obstructing vessel traffic. Proper anchoring will allow for tide (level) changes and current variations.

The containment boom stored at the Portland facility is pre-connected in 100 foot sections for immediate deployment from the storage boxes located on the river shoreline. From the shore, boom is pulled out into the water as the deployment boat tows the boom into position. The final position of the boom is arranged by laying appropriate anchors and mooring lines.

Particular attention will be given to "sealing" the shore end of the boom so that no oil can pass the boom. This is very important because booms are used to collect oil or to protect sensitive areas. Booms must be checked and maintained frequently to assure their effectiveness. Booms must also be checked regularly for buoyancy and for damage to joints, to ballast, and to anchors from debris, wind, and currents.

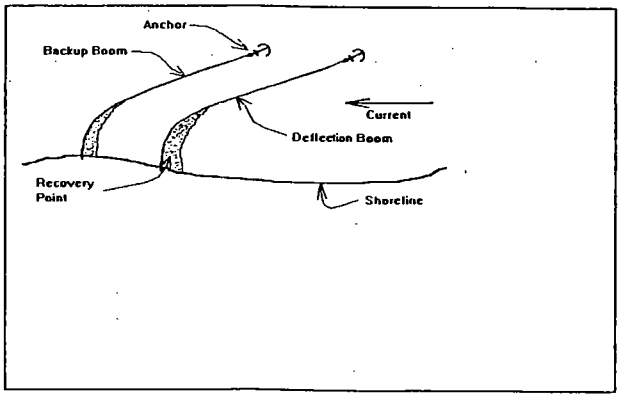
Containment Methods

The first spill response priority is to contain the spilled oil to limit the spread of the spill, to maximize the oil spill thickness for efficient recovery, and to minimize property and environmental damage. An oil boom may be used to surround spilled oil for collection and recovery. Also, booms may be positioned nearshore to deflect, divert, or exclude oil from reaching environmentally sensitive areas, such as

tide flats, or high value shoreline property, such as marinas, parks, or water intakes. Deflection or exclusion booms are usually secured to the shoreline or dock pilings and/or anchored to the water bottom.

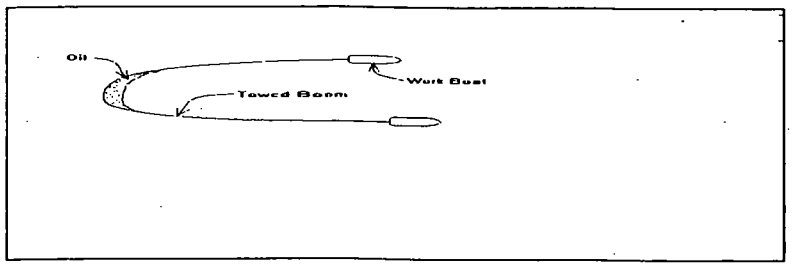
A containment boom can be pulled under the water surface or physically damaged by water current. Current greater than about 1.3 knots perpendicular to a floating containment boom will "entrain" or draw oil with the water flowing under the containment boom making the boom ineffective at containing oil. In water flowing at more than about 1 knot, a containment boom should be deployed at an angle to the current to reduce the "apparent" velocity against the boom and to limit entrainment. Booms deployed at an angle to the current also allow the oil to be deflected to a point of recovery, often along the shoreline. Figure 3-1, in the Figures section, shows the angle between the boom and the direction of the cunent necessary to limit entrainment as a function of current velocity.

Nearshore, it is advisable for angled deflection booms to be used in pairs in such a way that the second, backup boom is placed "downstream" to collect any entrained oil that may flow under the primary (upstream) deflection boom as shown below.



Deflection Boom for Recovering Oil at Shoreline (with backup boom to collect entrained oil)

Open water recovery is preferred to prevent oil from reaching high value property or environmentally sensitive areas. In open water, floating oil forms into wind blown streams and long patches in tide rips. Pairs of work boats towing a containment boom between them may pursue oil in open water by trolling along tide rips and wind blown streams. In this way, oil may be collected and concentrated. Trolling must be done at low speed to prevent entrainment of oil under the towed boom.



Use of Work Boat to Tow Boom for Off Shore Containment

3.1.3 Oil Recovery and Removal Methods

Skimmers

Skimmers are designed to recover oil or oil/water mixtures from the water surface especially where oil can be collected inside a containment or deflection boom.

Waves reduce the effectiveness of skimmers, and it is recognized that skinuners are most effectlve in sheltered waters. Skimmers are basically of two types:

a) Wier skimmers where floating oil is collected directly from the water surface. These devices are usually non-specific and collect water with the recovered oil. Large interim storage and oil/water separation equipment is necessary to support vacuum skimmers.
b) Oleophilic skimmers where the skimming device uses a material that selectively adsorbs oil and not water.

The operation of the weir skimmer depends on the fact that oil floats in a thin layer on top of the water. Weir skimmers mechanically collect or vacuum oil from the surface of the water and may collect water and oil together. Therefore, large interim storage or oil/water separation equipment is necessary to support weir skimmers. Also, waves reduce the effectiveness of weir skimmers which are most effective in sheltered waters.

Absorbent materials used for oil spill response selectively absorb oil and not water. These materials are called "oleophillic" materials. Recovery devices use oleophillic materials in the form of floating ropes (rope mops), discs, and belts. With each of these devices, the oleophillic material is drawn through the oil and water where the material selectively picks up the floating oil. Then, the oil adhering to the oleophillic material is squeezed or scraped off and is thereby recovered.

To recover oil contained by booms, weir skimmers or oleophillic skinuners are placed inside the booms and operated until recovery becomes inefficient or ineffective.

Sorbents

Oleophillic materials, or "sorbents" are also available in the form of two foot square sheets (called "pads"), pompoms (called "snares"), sheet rolls (called "sweeps"), and rolled booms (called "sausage booms") for recovering small amounts of spilled oil. These materials float but do not get "wet" in water. They absorb oil after which they may be retrieved by hand. If necessary, absorbed oil may be squeezed out of these materials which may then be reused to a limited extent. They are best used in sheltered areas around docks because they may be carried away by wind or current.

3.1.4 Containment and Recovery On Shore:

On-shore response efforts are organized into:

a) Protecting environmentally sensitive areas with diversion booms and
b) Removal and clean-up of oil and debris.

Shoreline clean-up will proceed in three stages:

a) Removal of heavy contamination and floating oil that can otherwise float away from the shoreline,
b) Clean-up of stranded oil and oily beach debris, and
c) Clean-up of light contamination and oily stains.

Specific response on shore depends on the length, type, and accessibility of the affected shoreline. Refer to the Shoreline Countermeasure Matrix (Figures 3-2 and 3-3, in Figures section) for specific methods to be used depending on the contaminated beach type. These specific shoreline response methods fall into the following general categories:

a) Mechanical pick-up of viscous (tarry) oils and debris,
b) High pressure and low pressure washing with water,
c) Use of sorbents, or
d) Leaving a particularly sensitive alone.

3.1.5 Oil Heavier Than Water (Group V Oils)

Procedures and Strategies

Water has a nominal specific gravity, or density, of 1.0 gram per milliliter. Federal regulations categorize oils that have specific gravities greater than 1.0 as Group V oils. These oils are denser, or "heavier" than water and will tend to sink in water.

At the Portland facility, at least one of the aboveground storage tanks in the north tank yard typically contains a Group V oil. The worst case discharge planning volume for Group V oils is assumed to be 60,000 barrels, the size of the largest tank

at the facility that may store Group V oils. The emulsification factor is assumed to be 1.0.

Group V oils are very seldom transferred over the dock. Group V oils are generally received from rail road cars and are only infrequently received at the dock from barges. When these oils are used for the blending of marine fuel oil products at the facility, the blending is done in the tank areas, inside secondary containment. The mixed products of the blending operations are usually Group IV oils and not Group V oils. It is the mixed product that is commonly transferred to the dock from the facility in the dock pipeline.

Group V oils pose difficult problems for spill response. Recovery of Group V oils is very difficult because it is hard to locate the oil under the surface where the water is influenced by tides and currents which can cany the oil away. Unless the flow is turbulent enough to keep the oil stirred up, Group V oils will settle to the river bottom. Sonar will be used to locate Group V oils on the river bottom. Silt curtains will then be used to collect Group V oils as they drift across the bottom of quiet water. If Group V oils can be collected behind silt curtains, then dredge pumps or vacuum pumps (with hoses manned by divers) will be used to bring the oil to the surface for recovery by processing through oil/water separators.

Sources of Equipment

For detecting, tracking, and mapping the spread of Group V oils on the river bottom and for assessing the impacts of Group V oil spills, David Evans and Associates, Portland, Oregon (503) 223-6663 has available side scanning sonar, precise mapping devices, and current velocity measurement equipment.

For recovery and mitigation, Devine Diving and Salvage Company, Portland, Oregon at (503) 283-5285 can provide divers and equipment to work underwater to deploy silt curtains and to recover submerged oil with dredge pumps or vacuum pumps.

Federal regulations require deployment of response resources for Group V oil spills within 24 hours of spill detection. For planning purposes, David Evans and Associates, and Devirre Diving and Salvage are both local companies. Their response time can be 4 to 12 hours depending on the time of the spill.

For fire fighting at the Portland facility, PTSI relies on the local fire fighting resources of the Portland Fire Department. The individual at the facility to work with the fire department for petroleum fires is the Qualified Individual, identified in Section 2.4.1. If the Qualified Individual is not at the facility at the time of an oil fire, the on-duty shift supervisor will work with the fire department to combat fires.

3.1.6 Use of Dispersants and In-situ Burning

PTSI has no intention of authorizing the use of chemical dispersants for oil spill response in the Willamette or Columbia rivers pursuant to Section IV of the Oregon Oil and Hazardous Materials Oil Spill Contingency Plan.

In-situ burning of oil on water is not allowed without prior approval of the ODEQ (refer to Section IV of the Oregon Oil and Hazardous Materials Oil Spill Contingency Plan). PTSI does not foresee in-situ burning as a feasible or practical spill response measure for use on the Willamette or Columbia rivers.

3.1.7 Clean-up Completion

Clean-up work will continue until written notice is obtained from the ODEQ that satisfactory clean-up has been achieved.

3.2 ENVIRONMENTAL PROTECTION

3.2.1 Protection of Sensitive Areas

Environmental protection will be achieved in the following ways:

- Prioritizing the use of an oil spill containment boom, where feasible, to divert or exclude oil from environmentally sensitive shoreline areas,
- Providing for wildlife rescue and rehabilitation, and
- Using methods to minimize damage to shoreline habitat from spill response activities.

The initial response efforts will be to deploy containment boom quickly, aggressively, and strategically to contain the spill as soon as possible to minimize damage and clean-up costs. While rapid containment (i.e., deployment of booms) is essential, the following priorities will guide any response:

a) Safety of employees and public,
b) Protection of environmentally sensitive areas, and
c) Protection of public and private property.

3.2.2 Priorities for Environmentally Sensitive Area Protection

Environmental protection will be achieved primarily by using oil containment booms to contain spilled oil or exclude or divert oil from environmentally sensitive areas. Boom deployment and containment methods are discussed in Section 3.1. The ODEQ Oil Spill Response Maps and the NOAA maps, "Sensitivity of Coastal Environmental and Wildlife to Spilled Oil, Columbia River" are included in Appendix D for reference. These maps identify marine mammal areas, bird colonies, marine habitat areas, fishing areas, and shellfish areas. They also show parks and public boat launch locations as well as shoreline beach types (classified into 6 categories matching the categories in the Shoreline Countermeasures Matrices, Figure 3-2 and Figure 3-3, referenced in Section 3.1, Shoreline and Beach Clean-up Strategies).

The main objective is to use oil containment booms to prevent oil from entering the main channel of the Willamette river, if possible. If oil enters the main channel of the Willamette river, then the objective is to exclude or divert oil from sensitive areas and high value properties (including parks and marinas). Protection priorities and strategies are identified in the forthcoming Geographic Response Plan (GRP) portion of the Northwest Area Contingency Plan.

Booming in the Willamette River, where the current may exceed 1 knot, will require booms to be deployed at an angle to the river current to deflect the oil toward the shoreline. Simply deploying a boom across the river may lead to loss of oil through entrainment under the boom if the current is greater than about 1 knot. The angle of deflection boom will depend on the current experienced. Figure 3-1 may be used as a guide to assist satisfactory deployment of deflection booms.

At the Portland facility, the specific booming strategy for environmental protection is shown in Figure 3-4, Spill Containment Boom Strategy, in Figures section. If oil escapes containment in the immediate area of the facility dock and threatens to spread down the Willamette and Columbia rivers, the Lower Columbia River Geographic Response Plan (GRP) illustrates ODEQ priority protection strategies to be implemented.

Copies of the most recent Lower Columbia River GRP are kept at the facility. Refer to Appendix D for specitic information.

3.2.3 Wildlife Rescue and Rehabilitation

Oiled wildlife is an exceptionally visible effect of an oil spill. Wildlife rehabilitation efforts are critical efforts. As outlined in the Oregon Oil and Hazardous Materials Oil Spill Contingency Plan, the rescue and rehabilitation of birds, marine mammals and other wildlife contaminated by oil will be directed by the Oregon Department of Fish and Wildlife (ODFW), the state agency responsible for wildlife and wildlife habitat. The ODFW may be contacted through the Oregon Emergency Management (refer to the Notitication, Section 2.4.1). The ODFW will implement the Oregon Oiled Wildlife Rehabilitation Plan and direct the selection of rehabilitation sites, equipment, and labor and will specify the rehabilitation techniques to be used. Wildlife rehabilitation may involve the use of volumteers. Volunteer management is addressed in the Oregon Oiled Wildlife Rehabilitation Plan. Also, the ODFW will help identify high value habitat threatened by a spill and will help decide which shoreline clean-up methods are consistent with tish and wildlife habitat protection.

PTSI will utilize the facilities and expertise of the Clean Rivers Cooperative to meet the oiled wildlife care needs for threatened and endangered species. The Wildlife Search, Rescue, and Rehabilitation Guidelines can be found in Appendix L. In addition, PTSI maintains 10 dozen portable animal carriers for transporting animals.

3.2.4 Shoreline Clean-up Operations

The NOAA (Appendix D) generally describe the shoreline along the Columbia River as follows:

NOAA Maps Shoreline Index	Shoreline Description
1	Unvegetated Steep Banks and Cliffs
2	Sand and Gravel Beaches
3	Riprap
4	Flats
5	Vegetated Banks
6	Marsh and Swamp

Figure 3-2 and Figure 3-3, the Shoreline Countermeasures Matrices, describe alternative clean-up options for these (and other) shoreline types. For example, for sand and gravel beaches, contaminated with heavy oils, the countermeasures matrix recommends manual debris removal, passive collection (sorbents), or debris removal with heavy equipment. For sand and gravel beaches contaminated with light oils, the recommended countermeasure is passive collection (sorbents). For all types of shoreline, the methods of clean-up should be chosen from among the recommended, applicable, or possible alternatives to minimize environmental habitat damage. Decisions about shoreline clean-up alternatives are made by the facility OSC or the Unified Command after consultation with the SOSC and the FOSC.

Water Intakes

The vulnerability of human health to a spill from the facility is very low. There are no known drinking water intakes in the affected areas of the lower Willamette and Columbia Rivers. The potential effects of an oil spill from the PTSI facility are likely to be limited to public and private property and the environment. Within the planning distance downstream there are several private water intakes used for utility purposes. These include the following:

WATER INTAKES

FACILITY	RIVER MILE	LOCATION
Ex-Trojan Power Plant	73 Columbia	Goble
Coastal Chemical	82.5 Columbia	Deer Island
Boise Cascade	87 Columbia	Scappoose
Oregon Steel	2 Willamette	Rivergate

In case of a spill, these facilities may be notified to take defensive actions, if necessary, to prevent damage to their facilities. Defensive actions may include reducing or stopping water intake, defensive boom deployment, and/or temporarily curtailing operations.

3.3 INTERIM STORAGE AND PERMANENT DISPOSAL

3.3.1 Disposal Plan

It is the responsibility of the Spill Response Manager, with the assistance of the Primary Response Contractor(s), to prepare a written disposal plan to identify suitable waste transportation, treatment, and disposal in accordance with all federal, state and local regulations.. The disposal plan shall have the authorization of the ODEQ, the USCG, and other appropriate government agencies. Disposal will follow the guidance of the "Oiled Debris Disposal Plan" of Appendix III of the Oregon Oil and Hazardous Materials Spill Contingency Plan. See Appendix K of this plan, Draft Disposal Plan for Oil Spill at Portland Facility, for guidance in the event of a major spill at the Portland facility.

3.3.2 Compliance with Laws and Regulations

The temporary (interim) storage and permanent disposal of oil/water and oily wastes and debris will comply with all applicable local, state, and federal laws and regulations.

3.3.3 Recovered Oil/Water Wastes

Interim storage of oil/water wastes will be in rented barges, in portable tanks or vacuum tmcks (available through the PRC), or in spare tank capacity at the fuel oil facility. There is abundant barge capacity available locally for rent from the local barge companies including Olympic Tug & Barge. The barge equipment operated by Olympic Tug & Barge is listed in Table 4, in Tables section. Recovered oil/water will be held temporarily in barges or tanks for reprocessing in oil/water separators. Facilities such as Harbor Oil have recovered oil/water treatment facilities available. Oil recovered in this way is considered a viable marketable product.

A commercial agreement exists between PTSI and Olympic Tug & Barge for the transportation of oil products owned by PTSI. This agreement addresses the use of barge equipment (including licensed tankermen for transferring oil and tugboats for towing). Spare barge equipment will be made available to PTSI upon request even under short notice circumstance that may occur in the event of an oil spill. Also, the Olympic tank barge equipment can be made available through Marine Spill Response Corporation. MSRC is an approved Oil Spill Response Organization under the USCG and list this barge equipment in their OSRO equipment inventory.

In addition, in the Portland facility, PTSI can at any time rearrange stored oil products through intertank transfers to empty aboveground storage tanks on short notice (less than 24 hours) to make tank storage space available for interim storage of oily water, if necessary.

Finally, vacuum truck equipment and portable tanks can be provided by the PRC(s) (see Appendix B) to provide interim storage.

3.3.4 Oily Debris

Suitable space for interim storage of oily debris includes paved areas where there is little danger of soil contamination and where public access can be restricted. Care will be taken with interim storage of oily debris so that contaminated rain water runoff does not result in new contamination. Interim storage sites must meet requirements of OAR 340-141-0140(24).

Oily debris (solids) will be tested to determine if it must be designated as a hazardous waste. Methods for permanent disposal of oily debris include transportation to suitable dump sites such as at Arlington, Oregon or to approved energy recovery (incineration) facilities. To minimize the amount of waste material eventually requiring disposal at land fills, it is essential that wastes be segregated upon recovery, so that burnable waste can be maximized.

The EPA ID No. for the Portland facility is ORD 038045233. This number must appear on the shipping manifest documents for transporting all hazardous wastes associated with spills from the facility.

3.4 HEALTH AND SAFETY PROCEDURES

3.4.1 Priority of Health and Safety

The health and safety of response workers, volunteers, and the public has the highest priority in this plan. Pacific Terminal Services, Inc. and the Primary Response Contractor(s) have the responsibility to provide and maintain a safe working environment for their respective workers and to adequately protect the public and others.

3.4.2 Phase I Response

After a spill, the dock operator and the shift supervisor will be alert for any fire danger, in which case, they will retreat to a safe distance and notify the Portland Fire Department at "911".

Before deploying any spill containment boom, the dock operator and shift supervisor will assess the risks in so doing, and will proceed only if it is determined

to be safe to do so. Risk assessment will include air monitoring for hydrogen sulfide, refer to Section 3.4.4. Even then, the dock operator and the shift supervisor will retrieve and use personal protective equipment including hard hat, safety goggles, rain gear, gloves, boots, and life jacket.

For PTSI employees, the PTSI Safety Officer will prepare a health and safety plan for on-going oil spill response activities. The Draft Site Health and Safety Plan in Appendix I may be used for guidance.

3.4.3 Phase II Response

At the beginning of the Phase II response, the Primary Response Contractor will immediately appoint a health and safety specialist who will develop a written, site safety plan for the Primary Response Contractor's work. The safety plan will address response worker safety, including training requirements, personal protective equipment, air monitoring, decontamination, and accident reporting.

3.4.4 Air Monitoring

Generally, the types of marine fuel oils handled by Pacific Terminal Services Inc. at Portland are low volatility oils that pose very low respiratory risk to workers, if spilled. However, these oils may contain dissolved Hydrogen Sulfide (H2S) gas which can be released from the oil if the oil is heated. To be safe, prompt and regular air monitoring (for hydrogen sulfide) by the Primary Response Contractor is essential until the risk is found to be non-existent. Before the PRC arrives (with a health and safety specialist), the on-duty shift supervisor is trained to perform air monitoring for H2S using a Draeger pump and detector tubes available at the facility in the quality control lab in the office building at the facility. The shift supervisor is capable of determining if it is safe to initiate spill response work.

3.4.5 Decontamination

For each spill response work site, a decontamination area will be established and all individuals leaving the spill response site will pass through the decontamination area.

Decontamination facilities, equipment, and supplies will be furnished by the PRC(s). Each spill response person who leaves a designated clean-up site where access is controlled will have to pass through a decontamination station.

Decontamination will involve scrubbing (with soapy water) and rinsing oil covered gloves, boots, and rain suits. Cleaned PPE may be reused. At the end of each day or shift, spill response personnel will remove and discard oil soaked PPE at the decontamination station. Discarded PPE will be collected in plastic bags or drums for proper disposal.

No. 6 fuel oil is persistent, but not very toxic. The purpose of decontamination for No. 6 fuel oil spills is primarily for housekeeping purposes to limit the amount of oil that is tracked outside of the clean-up areas.

3.4.6 Rest Rooms

Rest rooms are available in the office building at the facility.

3.4.7 Material Safety Data Sheets

MSDS sheets for all fuel oils handled at the Portland facility are available at the facility and are listed in Appendix C. In addition, MSDS sheets will be available for all hazardous substances used in the spill response. These MSDS sheets will be provided by the Primary Response Contractor(s). All containers of hazardous substances will be properly labeled.

3.4.8 Health and Safety Training

All response workers, including volunteers will be trained in the safe performance of their work, including the identity, presence, and handling of hazardous substances and measures (including personal protective equipment) to be taken to protect themselves.

Every person involved in oil spill response activities must have received health and safety training according to Occupational Safety and Health Administration (OSHA) Regulations, 29 CFR 1910.120, Emergency Response to Hazardous Substance Release, which the State of Oregon has adapted by rule (OAR 340-142).

Initially, the response to an oil spill that is not an incidental release (where the spilled oil can be controlled and absorbed at the time of the release by PTSI employees) is considered to be an "emergency" response until it can be determined that there is no potential health or safety hazard such as fire, explosion, or chemical exposure.

Personnel involved in emergency response operations shall be trained as follows according to the topics required by 29 CFR 1910.120:

Emergency Response Role	OSHA (29 CFR 1910.120) Designation	Minimum Hours of Health and Safety Training
Detect/discover spill Initiate Call-Out and Notificafions	First Responder Awareness Level	No minimum specified
Contain spill (from safe distance) Shutdown equipment Eliminate ignition sources	First Responder Operations Level	8 hours
Stop spillage Mitigate damages	HAZMAT Technician	24 hours
Incident Commander	On-scene Incident Commander	24 hours

The minimum training indicated in the table above covers personnel required to wear Level C or Level D Personal Protective Equipment (PPE) as defined by OSHA regulations. In general, Level C or Level D PPE involves air purifying respirators, if necessary, chemical resistant clothing, gloves, and boots, hard hat, and safety glasses or goggles. Level A or Level B PPE involving a self-contained breathing apparatus or a supplied-air respirator is not expected to be required for emergency response to fuel oil spills at the Portland facility.

An emergency response to an oil spill becomes a "post-emergency" response after:

- The Incident Commander, with the help of the responding Safety Officer, determines through air monitoring that there is no potential for fire, explosion or chemical exposure,
- Precautions are taken to protect human health and safety, and
- Clean-up operations are begun.

Personnel involved in post-emergency response operations shall have been trained as follows according to the topics required by 29 CFR 1910.120:

Response Role	Initial Training	Plus Initial Supervised Field Experience	Annual Refresher Training
Oil Spill Site Workers (on sites without health hazards where workers are not required to wear respirators.)	24 hours	1 day	8 hours
Managers and Supervisors	As above plus 8 hours Supervisor	3 days	8 hours

Notes:

- It is expected that post emergency response and clean-up operations for fuel oil spills at PTSI will not require respirator protection due to the low health hazard of the fuel oils handled at the facility.
- Oil Spill Site Workers include equipment operators and general laborers.
- Training requirements apply to all spill response personnel both facility employees and contract employees.

Where post emergency clean-up work is done on PTSI property using PTSI employees, such employees need only complete the following training:

1. Emergency Response Plan Training (per 29 CFR 1910.38a),
2. Respirator Training (per 29 CFR 1910.134), and
3. Hazard Communications Training (per 29 CFR 1910.1200).

All Pacific Terminal Services Inc. personnel (dock operators and shift supervisors) have 24 hours of oil spill response training and receive refresher training annually. The training includes:

a) The use of personal protective equipment (PPE), including life jackets;
b) Oil spill prevention and response planning;
c) Boom deployment;
d) Small boat handling and water safety, including water rescue and hypothermia; and,
e) Discharge prevention training.

Training records will be maintained for a period of 3 years.

3.4.9 Incident Command System Training

To effectively manage and carryout emergency response operations and to interact with govemment agencies, Spill Response Management Team personnel are trained in the organization and procedures of the Incident Command System (ICS) corresponding to each functional position in which they would be required to act.

3.4.10 Use of Volunteers

Because of the requirements for training, insurance, and support, this Plan does not cover the use of volunteers for spill response operations such as beach clean-up. PTSI recognizes that a Volunteer Management Plan that addresses beach clean-up by volunteers may be incorporated into the ACP when it is developed.

Guidance for the use of volunteers for wildlife rescue is covered by the Oregon Oil and Hazardous Materials Spill Contingency Plan. This program relies on the use of trained volunteers whose efforts are coordinated by the Oregon Department of Fish and Wildlife (ODFW). Before helping with wildlife rescue, volunteers are required to receive 8 hours of training in accordance with OSHA 20 CFR 1910.120. The ODFW may be contacted through the Oregon Emergency Response System

operated by the Oregon Emergency Management at (800) 452-0311 or (503) 378-6377 (out of state).

3.5 POST SPILL REVIEW AND REPORTING

Within 7 days following a spill Pacific Terminal Services, Inc. will submit a complete and detailed written report to the ODEQ describing all aspects of the spill and steps being taken to prevent a recurrence.

Within 60 calendar days of the completion of the response to an actual spill, a de-briefing meeting will be held involving appropriate people from Pacif c Tenninal Services, Inc. and the Primary Response Contractor(s) with invitations to representatives of the ODEQ, the USCG, and others designated by the Spill Response Manager. It is the specific purpose of this meeting to review the effectiveness of all aspects of the actual spill response including notification, containment, clean-up, disposal, safety, damage assessment, and communications. The objective is to improve the plan and any response to future spills.

It is the responsibility of the Spill Response Manager to arrange for and chair this meeting, and to prepare a written summary of recommendations for changes in the plan.

4.0 DRILLS AND EXERCISES

Oil spill drills and exercises are required by state and federal regulations as a means for demonstrating a facility's preparedness and ability to conduct an actual oil spill response according to the facility oil spill contingency plan. Also, drills are a way by which the adequacy and the effectiveness of the facility oil spill contingency plan may be evaluated. A drill or exercise may expose deficiencies in the spill plan which may mean that the spill plan must be modified or changed. The facility manager is responsible for conducting oil spill drills and exercises, including the evaluations, reports, and record keeping.

4.1 PREP GUIDELINES

A federal program called the National Preparedness for Response Exercise Program (PREP) incorporates oil spill drill requirements of the USCG and EPA. ODEQ drill policies are consistent with PREP requirements. Oil facilities are not required to follow the PREP Guidelines for oil spill drills. However, a facility which effectively uses the PREP Guidelines is in full compliance with the drill requirements of the federal regulations.

4.2 DRILL SCHEDULING

In Oregon state, large scale spill drills are coordinated and scheduled through the Agency/Industry Exercise Coordinating Committee (AIECC) to minimize duplication and conflicts. It is not mandatory for each facility to schedule it's drills with the AIECC.

4.3 REQUIRED FACILITY DRILLS

The USCG and the EPA may require the following oil spill drills:

Type of Drill	Frequency
Notification/Call-out Checklist Drill	Monthly
Equipment Deployment Drill	Semiannually
Spill Management Team Tabletop Drill	Annually
Unannounced Drill	Annually
Complete Plan Drill	Triennially
OSRO Equipment Deployment Drill	Annually

The requirements for these drills, based on the PREP Guidelines, are shown in Table 5, in Tables section. The PREP Guidelines allow for drill credit to be taken by a facility for the response to an actual spill, provided that the objectives of the drill are met during the actual spill response, an evaluation of the response is made, and proper records are kept, as outlined below.

4.3.1 Notification/Call-out Checklist Drill

The monthly Notification/Call-out Checklist Drill tests the notification and call-out procedures of the plan. This drill involves telephoning all of the persons on the call-out checklist (with the exception of the government agencies) to verify the accuracy of the telephone numbers and the ability to contact people, especially the Qualified Individual(s).

4.3.2 Equipment Deployment Drills

Equipment Deployment Drills are exercise activities in which response equipment is deployed at a specific site and operated under normal operating conditions. These semiannual drills may be either announced drills or unannounced drills. The ODEQ defines an announced drill as a drill that is scheduled well in advance of the drill date which may test any component of a contingency plan up to and including full deployment. An unannounced drill is defined as a drill called with minimal notice, or no notice, to the facility or participants which may test components of the contingency plan up to and including limited deployment.

4.3.3 Spill Management Team Tabletop Drill

The annual Spill Management Team Tabletop Drill draws key staff people with emergency management responsibilities together informally, usually in a conference room, to discuss actions to be taken during an oil spill, based on the procedures detailed in the response plan. Tabletop drills are characterized by a verbal "walk through" of a response scenario and such drills are designed to elicit constructive discussion by the participants, usually without time constraints, as they examine and resolve problems based on the response plan.

4.3.4 Unannounced Drill

During the annual Unannounced Drill, the facility spill management team and the PRC(s) will be activated and facility equipment will be deployed. This

unannounced drill may account for one of the semiannual Equipment Deployment Drills.

The goal of the triennial Complete Plan Drill is to test and evaluate the effectiveness of the whole response plan once every 3 years. The plan may be exercised all at once through a major exercise conducted by the facility or each component may be exercised in increments through a series of the other required drills. Whichever way is chosen, all of the following components of the response plan must be exercised:

a) Notifications,
b) Communications,
c) Staff mobilization,
d) Ability to form a Unified Command,
e) Ability to operate within an Incident Command System,
f) Ability to control spilled oil to mitigate damages,
g) Assessment of spill,
h) Containment of spilled oil,
i) Recovery of spilled oil,
j) Protection of economically and environmentally sensitive areas, and
k) Documentation.

Whether the whole plan is exercised by components or all at once, as long as the objectives listed above are met at least once within each 3 year period, the requirements of the triennial exercise of the entire response plan will have been met.

4.4 USCG AND ODEQ AREA-WIDE DRILLS

In addition to the facility initiated drills described above and in Table 5, PTSI will, if requested to participate, make every effort to participate in any area-wide drills, either announced or unannounced, conducted by the USCG or the ODEQ. PTSI understands that if the facility participates in a federal or state unannounced drill, participation in another state or federal unannounced drill will not be required for at least 24 months.

4.5 DRILL PROCEDURES

Every properly conducted drill will involve the following steps:

1. Definition of the goals and objectives of the drill,
2. Drill design and preparation,
3. Drill execution,
4. Drill evaluation,
5. Report preparation and record keeping, and
6. Modificafion of the spill plan, if necessary.

4.5.1 Goals And Objectives

In general, the goals and objectives of a drill are to:

1. Evaluate the effectiveness of the facility oil spill response plan,
2. Evaluate the readiness of the facility operator to respond to an oil spill, and
3. Provide leaming opportunities for all involved in oil spill response preparation.

4.5.2 Drill Design And Preparation

Drill design and preparation includes:

1. Selecting areas of spill plan to be exercised,
2. Developing an oil spill scenario (in real time or in compressed time),
3. Determining the extent of equipment deployment, if any,
4. Identifying a drill coordinator and the drill participants, and
5. Inviting the participation of the state and federal agencies as participants or observers, and seeking their assistance in drill design and/or evaluation.

4.5.3 Drill Execution

Drill execution involves:

1. Holding a pre-drill training/briefing and
2. Conducting the exercise.

4.5.4 Drill Evaluation

Drill evaluation will follow each drill. The stated objectives of the drill will be used as the minimum criteria to judge the effectiveness of the plan and the performance of personnel and equipment during the drill. The purpose of a drill evaluation is to assess preparedness by comparing what happened during the drill to what was planned, as outiined in the contingency plan. The focus of the evaluation will be on the interaction between the facility personnel, the primary response contractor(s), state and federal agencies, and others who may participate in a spill response. The evaluation will not focus on any individual's performance but rather on the performance of the spill plan. Written recommendations for changes in the plan may be made based on the evaluation. Evaluations may include invited ODEQ and/or USCG representatives (who may have observed or participated in the drill exercise), but regulations allow for "self-evaluations" by facilities which will be led by the facility manager or a Qualified Individual.

4.5.5 Report Preparation And Record Keeping

Report preparation and record keeping will be done after the completion of the drill. Written records will indicate the following informafion:

1. The type of drill,
2. The date of the drill,
3. The drill goals and objectives
4. The facility personnel, equipment, and spill management team involved,
5. The PRC(s) involved, if any,
6. The govemment representatives involved, if any,
7. A summary of "Lessons Learned", and
8. Recommendations for changes in the spill contingency plan.

Regulations allow for "self-certification" by facilities which involves documenting that the drill was completed, the drill met the required objectives, and the effectiveness of the plan was evaluated based on the drill performance. Figure 4-1, in Figures section, is an Oil Spill Drill Report form which may be used to document drill activities. Drill reports or documentation will be signed by the facility manager. Drill records will be kept at the facility for 5 years (according to EPA rules) and will be made available to government agencies upon request. The USCG may verify the facility drill/exercise records during normal facility inspections.

4.5.6 Modification Of The Spill Plan

Modification of the spill plan is the final step of a drill exercise and accomplishes the main objective of the drill activity which is to identify weaknesses in the spill plan that, once addressed or corrected, will enable the facility to carryout a more effective response to an actual spill incident.

5.0 SPILL PREVENTION MEASURES

5.1 OIL SPILL PREVENTION STRATEGY

Spill prevention measures are addressed in the Oil Spill Prevention Strategy, Appendix E.

5.2 SPILL RESPONSE AND PREVENTION TRAINING

Oil transfer personnel receive classroom and on-the-job training prior to performing oil transfers. The competency of facility personnel is judged by their supervisor(s). Employee training in oil transfer operations is documented in personnel training records. The amount of training required to achieve competency varies based on individual employee learning capabilities.

Oil transfer training includes familiarization with the oil transfer facility operations and equipment, completion of applicable paperwork and record keeping, a review of the oil spill response plan and spill response and prevention training applicable to the employee's role and responsibilities in an oil spill emergency.

Spill prevention training focuses on human factors, such as tank overflows and incorrect valve alignment, as causes of oil spills.

Spill response training covers the following topics:

- Spill Detection,
- Shut Down and Mitigation Procedures,
- Call Out Procedures,
- Notification Procedures,
- Emergency Response Action Plan,
- Use of Primary Response Contractors,
- ICS Purpose, Implementation, and Use, and
- Applicable laws and regulations.

5.3 FACILITY INSPECTIONS AND MAINTENANCE

The facility pressure tests the oil transfer pipeline annually according to USCG regulations. This is the only pressure related oil transfer equipment. The following equipment is visually inspected regularly, at least daily, and before each use:

- Storage Tanks,
- Secondary Containment, and
- Containment Boom and other Response Equipment

The storage tanks are maintained per API standards. Secondary containment is subjected to routine visual inspection.

Before each use, the visual inspections are performed by the dock operator prior to the start of any oil transfer operation and continuously during the transfer. The visual inspection includes a check of proper valve alignment, and of signs of leaking in the tank yard area, along the pipeline, and at the dock. The operators may use the Equipment Inspection Check List and Log, Figure 5-1, in Figures section, to record the inspections and any findings of discrepancies between the actual condition of the equipment and the expected condition of the equipment for any item in the inspection check list.

When the oil transfer pipeline is idle, the oil levels in the storage tanks are manually gauged daily for inventory management and control, and the tanks and the secondary containment are checked for leaks.

A formal facility inspection is conducted monthly per the Spill Prevention Control and Countermeasures (SPCC) in Appendix E.

5.4 SECURITY

Facility security is provided to prevent unlawful entrance, detect fire hazards, and maintain the readiness of protective equipment. The facility is bordered on three sides by chain link fencing. Access may be controlled by a guard at the facility gate.

The flanged end of the pipelines have blind flanges bolted to them when the pipelines are not in use.

6.0 SPILL RISK VARIABLES

6.1 OILS TRANSFERRED OVER THE DOCK

Based on 2000 data, Pacific Terminal Services Inc. transferred 1,872,676 barrels out across the dock at the Portland facility.

6.2 TRUCK AND RAILCAR OPERATIONS

6.2.1 Truck Loading

Truck loading operations are conducted at the Truck Loading Rack (refer to Figure 1-3). The oil delivered to trucks is mostly No. 6 fuel oil. Each truck may carry about 150 barrels. The number of trucks loaded varies by season. In the winter season, between October and April, the facility is staffed to load trucks 24 hours per day. The amount of oil delivered to trucks during the winter varies widely but may be up to 2000 barrels per day (in 13 trucks). For short periods, during very cold weather, the oil delivered to the truck rack may be as high as 6000 to 7000 barrels per day. During the summer, off season only about one truck per day is loaded.

Except for special products that must be blended by facility personnel at the truck rack, trucks are loaded by the truck drivers. The truck rack is a top-loading rack from which a loading arm is lowered through the open top (dome) lids of the truck tanks. The oil product is pumped through a meter for accounting purposes, but the truck filling is controlled by the truck driver by visually monitoring the oil level in the truck tank as it is filled. The driver stops the oil flow by manually closing the valve on the loading arm when the oil level reaches the full mark inside the truck tank.

6.2.2 Truck Unloading

There are two locations at the facility where tmcks are unloaded. One location is between the Truck Loading Rack and the North Tank Yard. The other is southwest of Tank 5. In the first location, diesel oil is the primary product unloaded. Diesel oil is normally received at the facility by barge or by pipeline. Trucks are only unloaded when these normal transportation alternatives are not available. This may happen five or six times per year. When diesel is delivered by truck, a total volume of oil between 1000 barrels and 5000 barrels may be received in 5 to 25 truck loads. Usually this is done by running two tmcks continuously between the supplier and the facility until the desired volume of product is received. At the other truck unloading location, heavier oil is received at the fairly steady rate of about 10 tmcks per week. These are usually received during daylight hours on week days. The tmck unloading operation is conducted by the tmck driver who may use gravity, the tmck pump or the facility pump, if available, to transfer the oil product.

6.2.3 Railcar Unloading

Railroad cars are unloaded at the Railcar Unloading Area (refer to Figure 1-3). The railroad siding track can accommodate five rail cats at a time. Each railroad tank car holds about 500 barrels of oil. Two types of oil products are received by railroad tank cars. One type of product is received year around, but at the rate of approximately 10 railcars per month in the summer and 20 railcars per month in the winter. The other product is only received during the winter at the rate of about 20 cars per month. This second product is commonly received at a temperature at which it cannot be efficiently pumped. Therefore, railcars containing this product may be heated by steam which is applied to heating coils fitted inside the railcars. Heating may be required for 12 to 24 hours before the oil is hot enough to pump. The railcar unloading operation is attended by one facility operator who is stationed at the Railcar Unloading Area. The oil is transferred through a 6" steel pipeline that is insulated and steam heat traced.

6.3 DAY-TO-DAY OPERATIONS

There are four common types of day-to-day operations which may present a risk of releasing oil.

6.3.1 Intertank Transfers

The first type of day-to-day operation is the intertank transfer which involve pumping oil products from one tank to another tank through interconnecting piping. This may happen only two times per year when tanks are switched from storing one product to storing another product. Also, this may happen more frequently to blend different products in tanks. For example, in the winter the oil products stored in Tank 2 and Tank 4 may be added to Tank 1 to blend together a final product in Tank 1 for delivery by tank tmcks. This type of transfer may happen once per week in the busy winter season. The greatest risk of spill in this type of transfer operation is the risk of tank overfilling. Another example of intertank blending is the blending of oil products in Tank 7 by transferring products from Tank 2 and Tank 3. In the busy winter season, this may happen 3 times per day. The greatest risk of spill in blending Tank 7 is the risk of overfilling the tank, which is small compared to the pumping capacity of the oil transfer pumps. The tank is fitted with a high level shut off switch to prevent overfilling.

6.3.2 Boiler Fuel Transfers

The second day-to-day operation presenting a risk of spill is the filling of Tank 6 diesel oil to fuel the boiler. This type of transfer happens only when diesel is used in lieu of natural gas to fuel the boiler. This type of intertank transfer may occur during the winter time up to two fimes per day when the boiler is being used continuously. The risk of spill in this transfer is the risk of overfilling Tank 6. Tank 6 has been fitted with a high level shut-off device to stop the oil transfer and prevent a tank overflow.

6.3.3 Maintenance

The third type day-to-day operation that may present a spill hazard is on-going piping, valve or pump maintenance or repair which may involve replacement of affected parts. During maintenance procedures pipelines and equipment must be depressurized and drained before opening. The risk of spill is greatest if the disassembled parts are not conectly reassembled with proper gaskets and bolts are not securely tightened.

6.3.4 Annual Pipeline Hydrostatic Test

A fourth type of day-to-day operation that may present a spill hazard is the annual hydrostatic testing of the dock pipelines. Once per year the oil transfer pipelines on the dock are tested to 225 psig (1.5 times the 150 psig working pressure) in accordance with USCG mles. This operation is usually conducted using oil as the test fluid. The risk of spill is from the higher than normal pressure involved. As a precaution, in case of a spill, the oil spill containment boom is deployed around the facility dock during the test.

6.4 PHYSICAL PROPERTIES OF OILS

Physical properties of the oils being handled at Portland are listed in Table 6, Typical Physical Properties of Oils, in Tables section.

6.5 TANK CONTENTS AND CAPACITIES

Refer to Table 1, in Tables section, for tank contents and capacities. There has been no known failures of any aboveground storage tank or secondary containment system.

6.6 FACILITY CONTAINMENT AND DRAINAGE SYSTEM

The facility is located on the shore of the Willamette River with a dock and piping extending over the water for loading and unloading of fuel to oil tank vessels. All of the aboveground storage tanks are surrounded by dirt or concrete containment walls high enough to contain the volume of the largest tank in the containment area, plus rainfall. The terrain is flat and the soil is dense and compacted. Large areas are paved with concrete and asphalt.

Average annual rainfall is 39 inches. There is no storm sewer system at this facility. The facility is graded so that all drainage is collected in catch basins and sumps, pumped to oil-water separators and then to holding ponds before being discharged to the Willamette River in accordance with NPDES permit All drainage is directed towards the various sumps where it is periodically pumped to the oil-water separator. Refer to Figure 6-1, Facility Drainage, in Figures section.

All oil spillage and surface water is processed through the system to separate the oily waste from the water. The processing system consists of sumps with centrifugal pumps that transfer the waste water through an oil-water separator and then to the settling ponds. The discharge from the oil-water separator is visually monitored to verify that no oily waste is discharged to the settling ponds. The oil-water separator maintenance log is maintained on file for 60 months.

Auxiliary water pumps are used as back up to the sump pumps under extreme precipitation conditions. If used, the auxiliary water pumps are manually operated and are continuously monitored during operation to be sure that oil is not pumped with the accumulated storm water.

The volume of the secondary containment areas, exclusive of the volume occupied by the storage tanks, is estimated to be:

North Tank Yard	64,300 barrels
South Tank Yard	127,700 barrels
Tank 6	14 barrels
Tank 7	525 barrels

The sump in each of the two secondary containment areas can contain up to approximately 13 barrels.

The containment capacity of the dock service platform is approximately 131 barrels. Accumulated rain water is pumped from the dock service platform to a holding (separator) tank located in the South Tank Yard, which overflows into the South Tank Yard sump. In addition, the oil pipe risers on the dock service platform are surrounded by a containment box which catches minor drips and spillage from hose handling.

For minor spills inside secondary containment, absorbent materials are used to soak up free oil. Oil soaked dirt or gravel is shoveled into drums for incineration or transport to land fill. For larger spills, oil is recovered with vacuum tmcks and oil soaked dirt or gravel is transported off-site for incineration or land fill.

6.7 SPILL HISTORY

Specific information about spills is listed in Appendix E. Most of these have been contained in the tank farm. The written record of such spills is sketchy but spills have occurred due to the following causes:

a) Tank overflow due to operator error,
b) Railroad car leaks due to valve mechanical failures, and
c) Pipeline leaks due to mechanical failures.

When a spill has occurred, the cause of the spill has been addressed to reduce the likelihood of a recurrence.

7.0 ENVIRONMENTAL VARIABLES

7.1 AFFECTED NATURAL RESOURCES AND HABITAT

Environmentally sensitive and economically important areas are identified in the Geographical Response Plan (GRP) for the lower Columbia River. The economically important and environmentally sensitive areas identified in the GRP for the Lower Columbia River.

The Geographic Response Plans for Portland to Longview are kept at the facility.

For the Portland facility, the calculated planning distance extends downriver 35 miles (see calculation in Appendix J) and include the following areas to be protected:

Strategy Area Description		Boom Need
1	Mouth of Willamette, Sauvie Island, Multnomah Channel	6,700 feet
2	Ridegefield, Bachelor Island Slough	2,100 feet
3	Smith/Bybee and Columbia Slough	1,400 feet
4	Martin Island and Burke Island	1,600 feet
5	Goble and Tide Creek	200 feet

7.2 SEASONAL HYDROGRAPHIC AND CLIMATIC CONDITIONS

Refer to the attached NOAA Local Climatological Data, Normals, Means and Extremes for Portland, Table 7, in Tables section, for wind speeds and directions. Note that the average annual wind speed is 7.9 mph from the east southeast.

It is difficult to generalize about the flow conditions in the lower Willamette or the lower Columbia Rivers. Flow-rates and currents are affected by the ocean tides, the controlled outflows of Bonneville dam, and the natural outflows from many rivers including the Willamette and Cowlitz Rivers. However, historically, two high water levels occur in December or January and in early June. These high water levels are typically due to winter rains and spring snow-melt runoff, respectively.

The water level or "stage the river", referenced to Columbia River Datum (CRD) as measured at the Interstate 5 highway bridge (or the Portland Harbor Datum as measured at the Morrison Street Bridge), can very between -1 foot and +25 or +30 feet. At "stages" up to +10 feet, the flow of the river is affected by ocean tides and the rivers in the Portland area can actually flow "backwards" or "upstream". At higher stages, tidal influence does not significantly affect the river flow.

The other predominant climate factor is wind which can be the dominant influence in spreading oil on the surface of the water at low flow conditions or slack water.

The latest information and forecasts of river stage and flow, are available from the Columbia River Forecast Office of the US Weather Service at (503) 249-0666. In the event of a spill, the weather service can predict river flow and stage over 24 to 48 hours periods using computer models of the lower river systems.

8.0 LOGISTICAL RESOURCES

1) Fire and Emergencies: Portland Fire Department — 911

2) Ambulance Service:

American Medical Reponse	(503) 288-8426
	(503) 231-6300

3) Hospitals:

a) Enamel Hospital (for Trauma Emergencies)	(503) 413-2200
Emergency Room	(503) 413-4128
Address: 2801 N. Gantenbien	
b) Good Samaritan Hospital	(503) 413-7711
Emergency Room	(503) 413-7260
Address: 1015 NW 22nd	

4) Traffic:

a) Portland Police	911
b) River Patrol	(503) 288-6788
c) Marine Operator: Ask for Marine Operator after dialing	0
d) Federal Aviation Administration, Air Traffic Control	(503) 326-2557
	or
	(503) 284-1711

5) Accomodations:

Hawthorne Inn & Suites	(503) 497-9044
4319 NW Yeon	

6) Shoreline Access: Public Boat Launches

a) Cathedral Park (under east end of St. John's Bridge)
b) Larson, Gregs, or Gay Moorage's (east shore of Multhomah Channel)

7) Barge Companies for interim storage:

a) Olympic Tug & Barge	(503) 241-1090
b) Tidewater Barge Lines, Inc.	(503) 281-0081

8) National Weather Service :

a) Weather Report	(503) 243-7575

FIGURE 1-1

GEOGRAPHICAL AREA MAP

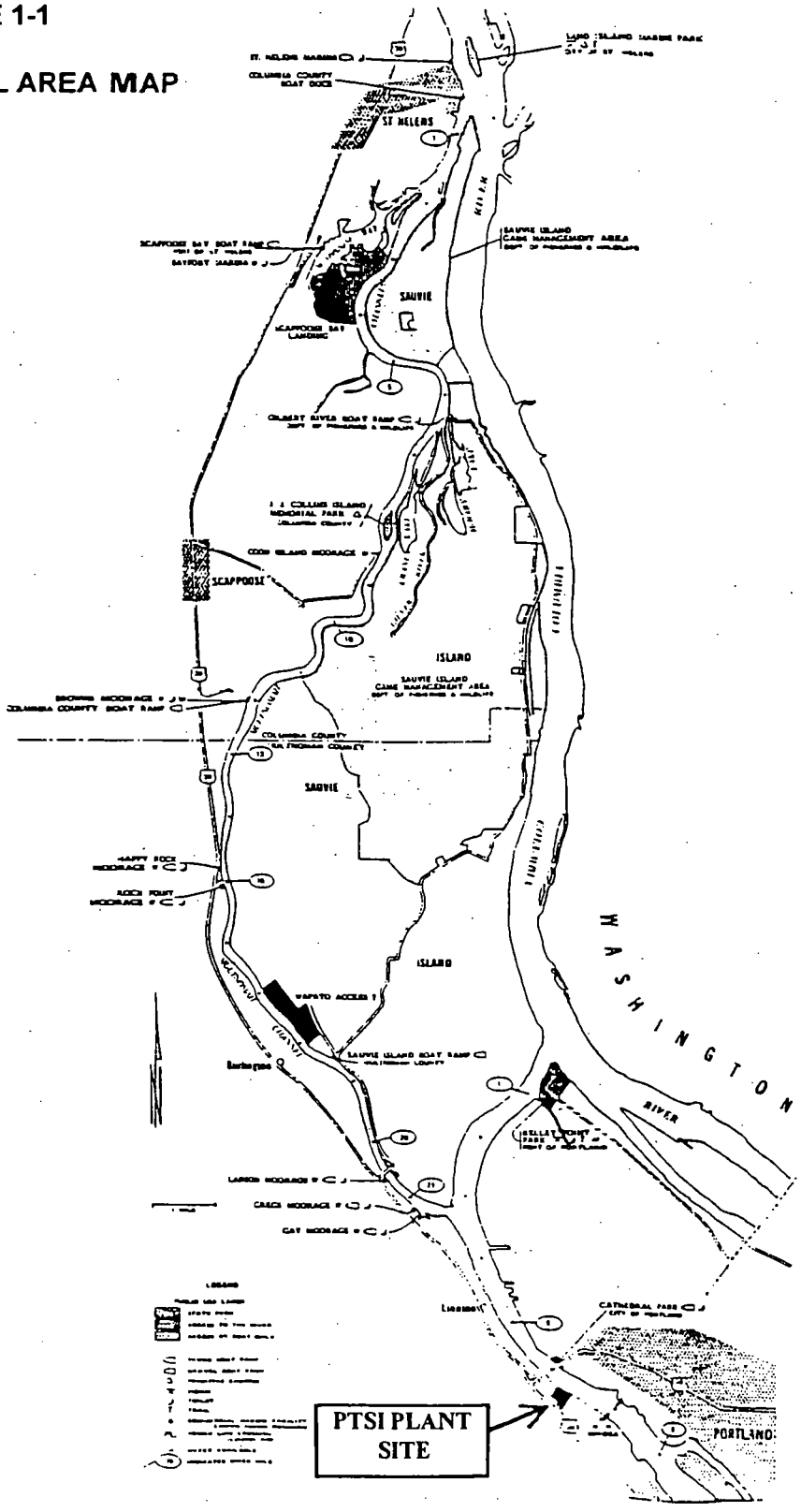


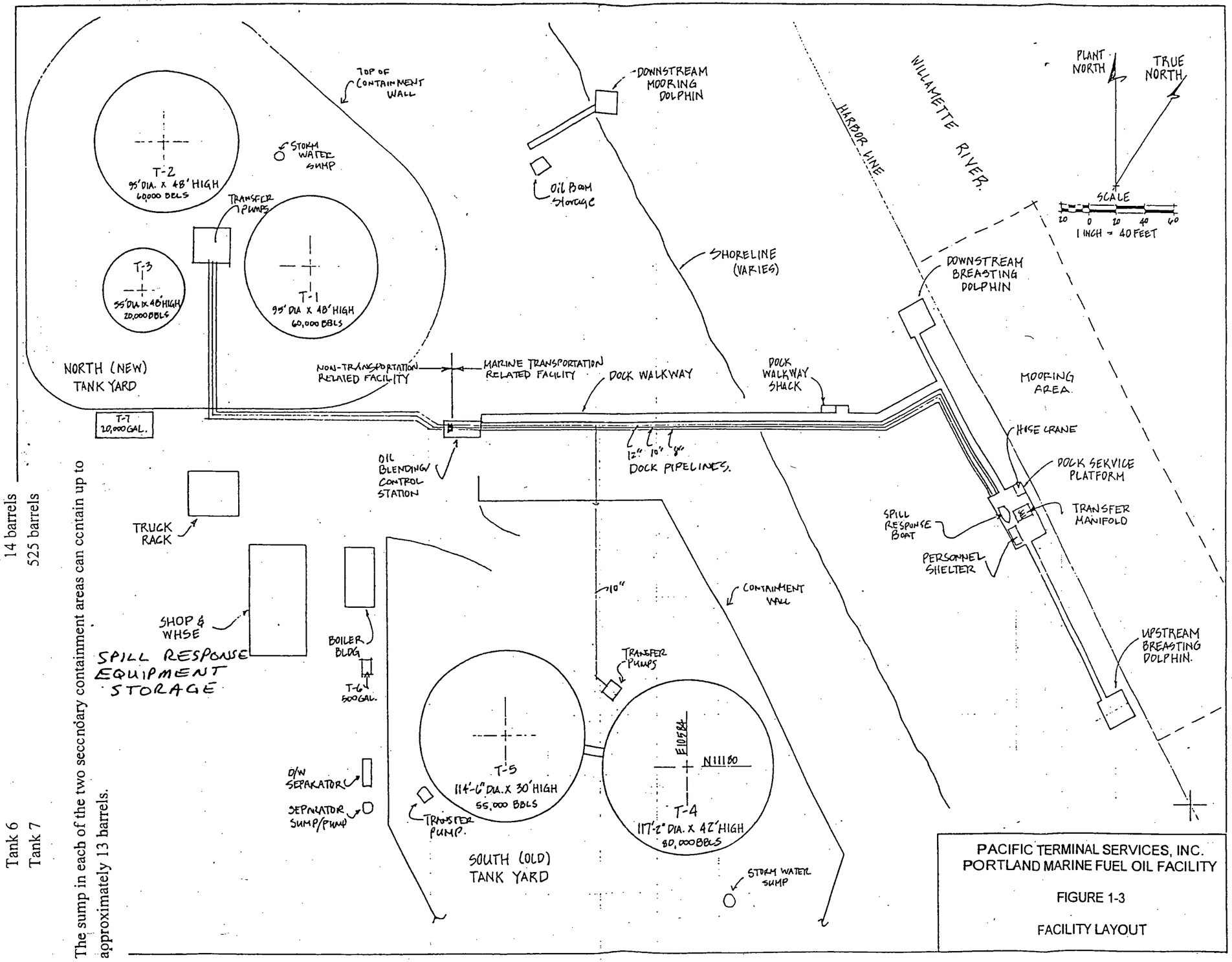
FIGURE 1-2

SITE LOCATION MAP

The volume of the seoondary oontainment areas, exolusive of the volume o
by the storage tanks, is estimated to be:

Ncrth Tank Yard	64,300 barrels
South Tank Yard	127,700 barrels
Tank 6	14 barrels
Tank 7	525 barrels

The sump in each of the two seccndary containment areas can ccntain up t
approximately 13 barrels.



PACIFIC TERMINAL SERVICES, INC.
PORTLAND MARINE FUEL OIL FACILITY

FIGURE 1-3

FACILITY LAYOUT

FIGURE 1-4

RELATIONSHIP OF FEDERAL, STATE, AND LOCAL OIL SPILL CONTINGENCY PLANS

(Derived from Oregon Oil and Hazardous Materials Spill Contingency Plan)

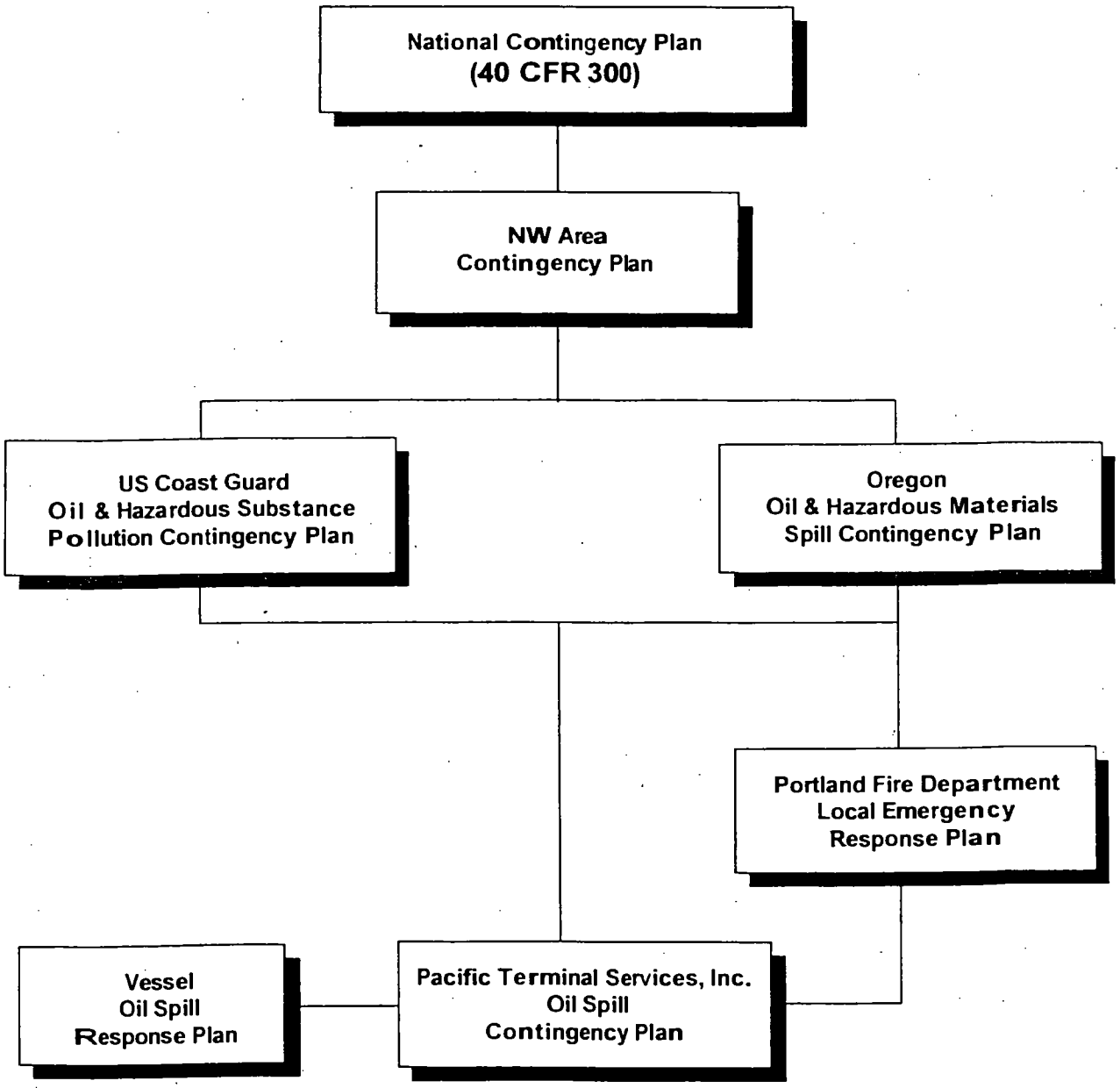


FIGURE 1-5

SPILL RESPONSE ORGANIZATION
PHASE I EMERGENCY (First Hour) REPONSE

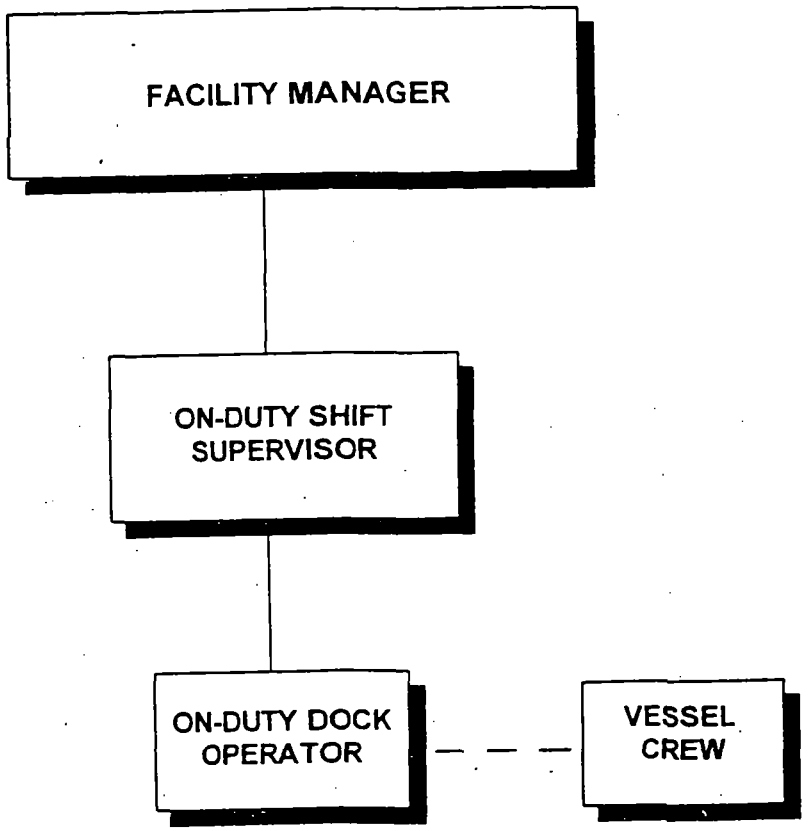


FIGURE 1-6

MAIN OIL SPILL RESPONSE TEAM ORGANIZATION

PHASE II

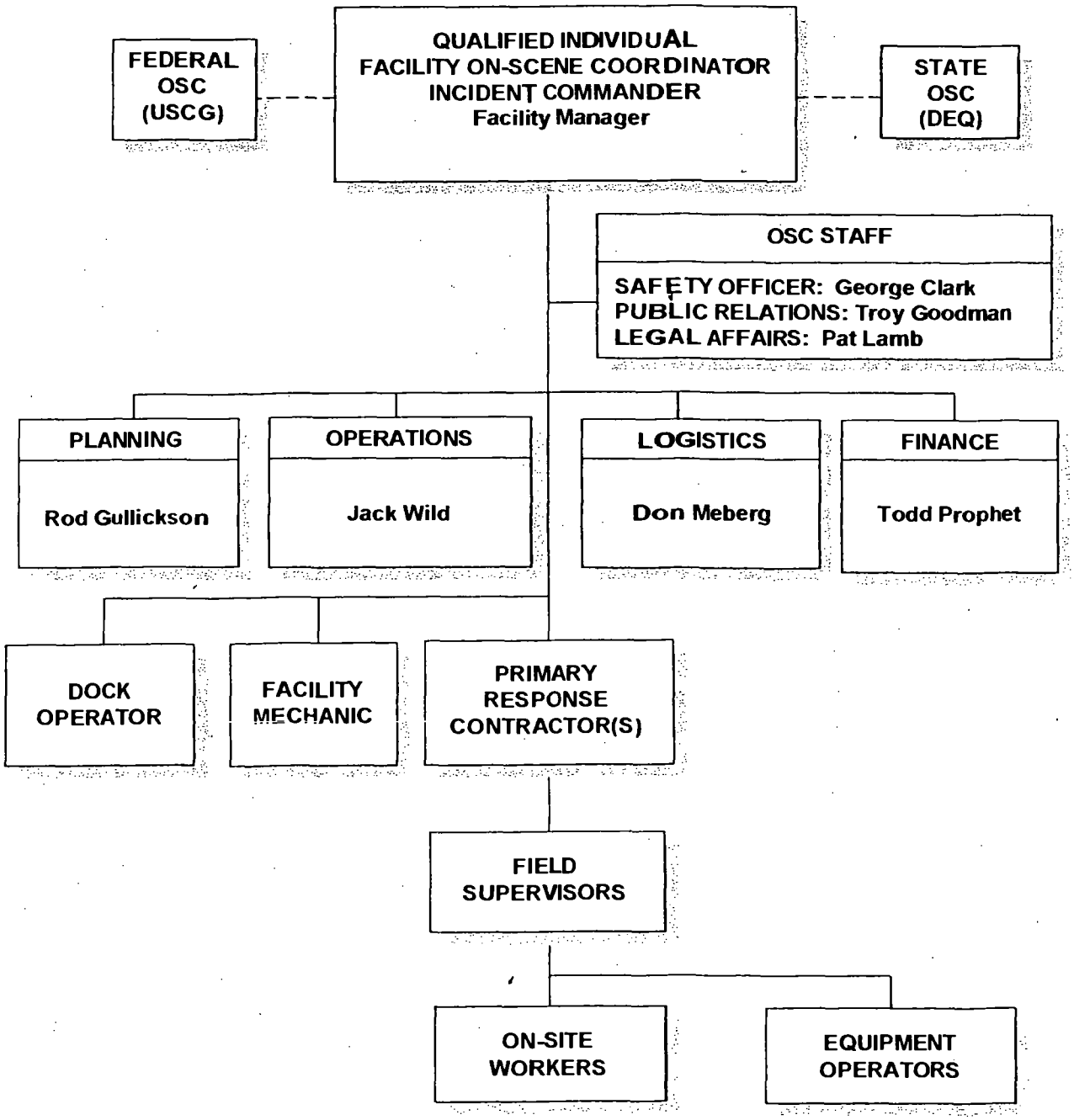


FIGURE 1-9

LETTER OF QUALIFIED INDIVIDUAL AUTHORIZATION

PACIFIC TERMINALS SERVICES, INC.
910 SW Spokane Street, Seattle, WA 98134
Telephone (206) 628-0051 Fax (206) 628-0293

Date:

To Whom It May Concern:

Subject: Designation and Authority of Qualified Individual(s) for Oil Spill Response

The purpose of this letter is to designate the following individuals as Qualified Individuals (Ql's) as defined by federal regulations:

1.	Troy Goodman,	Qualified Individuat
2.	George Ctark	Alternate Qualified Individual
3.	Jack Wild	Alternate Qualified Individual
4.	Tina Garrett	Alternate Qualified Individual

These Ql's have full authority, hereby given by Pacific Terminal Services, Inc., to:

1. Acdvate and engage in contracting with oil spill removal organization(s),
2. Act as liaison with the Federal On-Scene Coordinator who may respond to an oil spill, and
3. Obligate fimds required to carry out necessary, or directed, oil spill response activities.

These individuals meet the following qualifications for Ql's by being:

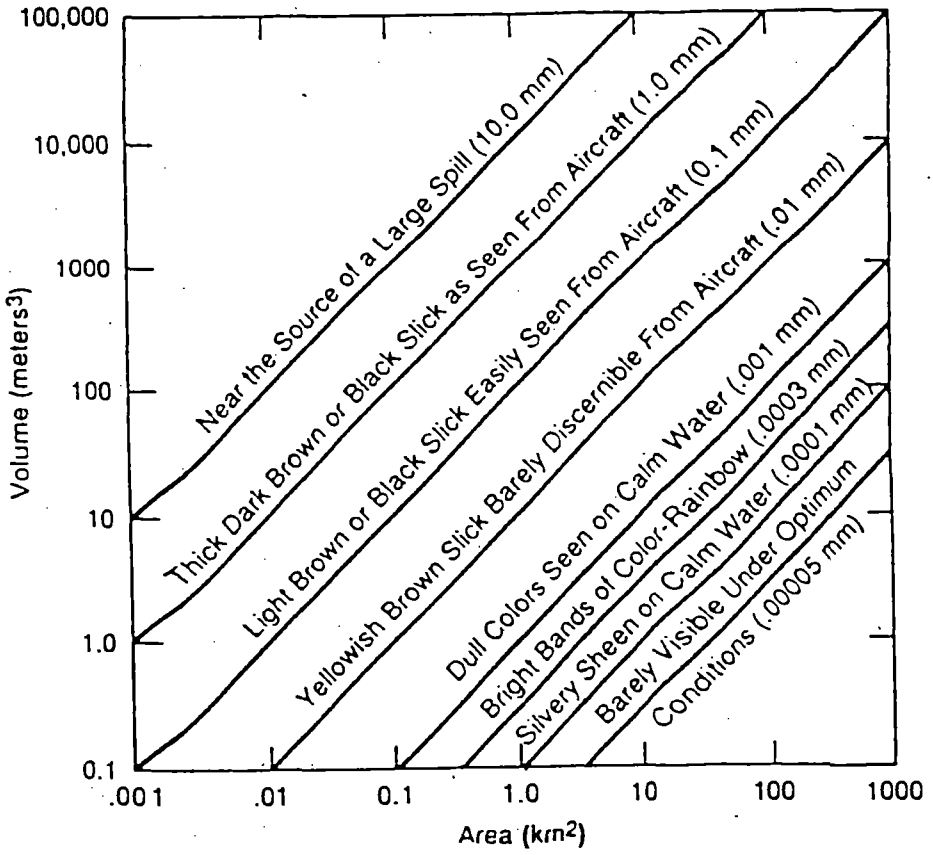
1. Located in the United States,
2. Fluent in die English language,
3. Available on a 24-hour basis,
4. Able to arrive at the facility in a reasonable time,
5. Familiar with the facility oil spill response plan, and
6. Trained in the responsibilities of the Ql under the facility oil spill response plan.

In their capacities as Ql's, these individuals are not responsible for the adequacy of the facility oil spill response plan nor are they responsible for contracting or obligating funds for response resources beyond the full authority contained in this designation tetter.

Sincerely,
Pacific Terminals Services, Inc.

FIGURE 2-1

VOLUME OF OIL SPILL VS COLOR (THICKNESS) AND AREA OF SPILL



VOLUME OF OIL SPILL vs COLOR (Thickness) and AREA OF SPILL

FIGURE 2-2

SPILL RESPONSE OPERATIONS FLOW CHART

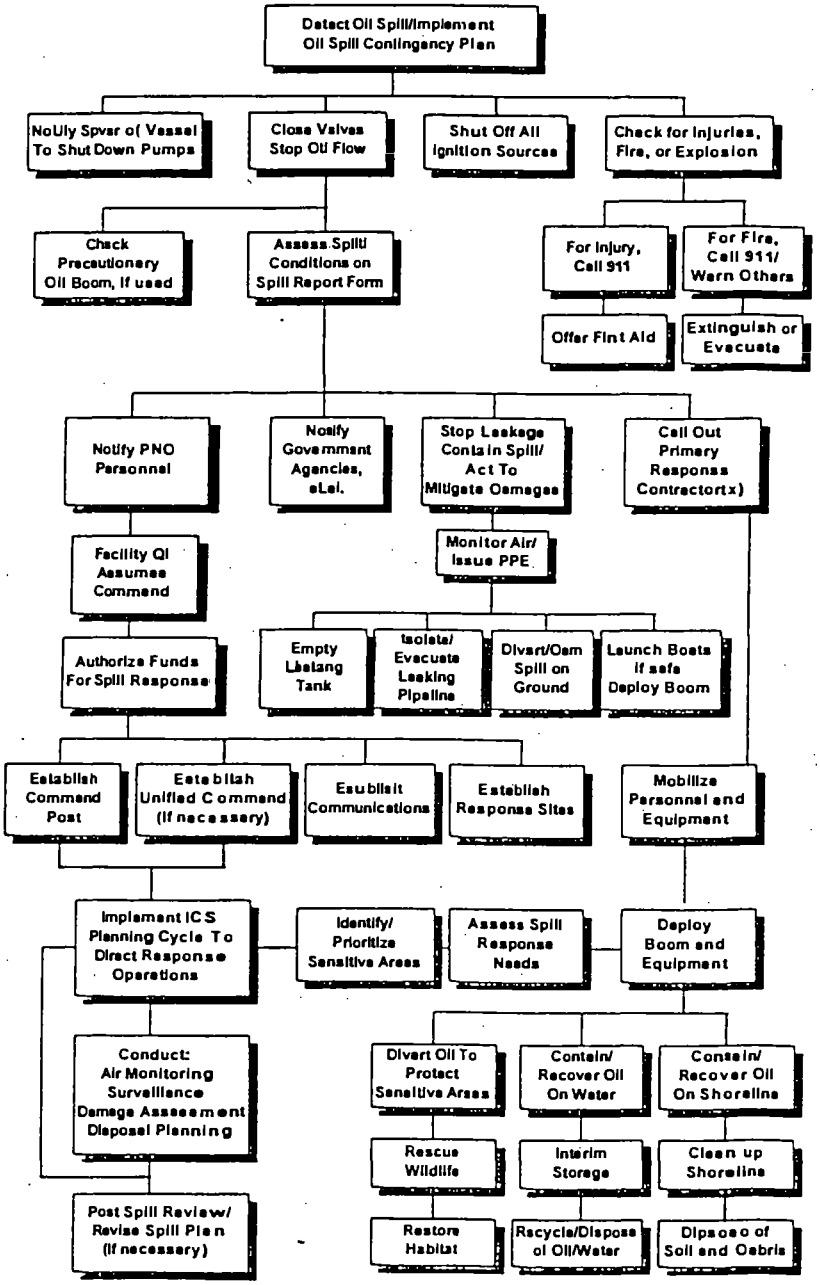


FIGURE 2-3

OIL SPILL RESPONSE OPERATIONS CHECKLIST

Emergency Action Steps

- ☐ Stop the flow of oil
  - ☐ Notify barge crew to shutdown pumps.
  - ☐ Close pipeline valves.
- ☐ Shut off all ignition sources.
- ☐ Check for injuries, get help, and offer first aid, if necessary.
- ☐ Check for fire or explosion, warn other, get help, evacuate area or tight fire.
- ☐ Contain spill, if possible:
  - ☐ Deploy containment boom.
  - ☐ Monitor air for H2S and use proper PPE.
  - ☐ Empty leaking tank.
  - ☐ Isolate and/or evacuate leaking pipeline.
  - ☐ Divert or dam spill on ground.
- ☐ Call out Primary Response Contractor(s).
- ☐ Notify facility Spill Response Team on Mill Call Out List
- ☐ Notify government agencies.
- ☐ Establish ICS lo manage spill response operations.
- ☐ Authorize Funds for spill response.

Assessment and Response Planning:

- ☐ Implement ICS planning cycle.
- ☐ Assess health and safety hazards, prepare Health and Safety Plan
- ☐ Conduct air monitoring.
- ☐ Assess nature and extent of spill.
- ☐ Survey and predict spill movements.
- ☐ Identify and prioritize environmentally sensitive areas.
- ☐ Develop booming strategy.
- ☐ Identify response equipment and personnel needs.

Containment and Environmental Protection:

- ☐ Locate sufficient boom and deployment equipment and labor.
- ☐ Mobilize and deploy containment boom according lo booming strategy.
- ☐ Oiven oil from sensitive areas.
- ☐ Rescue wildlife.

Recovery:

- ☐ Locate sufficient skimming equipment, sorbent materials, and deployment equipment and labor.
- ☐ Mobilize and deploy skimmers/sorbents on water.
- ☐ Mobilize and deploy shoreline clean-up labor and equipment
- ☐ Mobilize and deploy interim storage to support recovery operations.

Disposal:

- ☐ Develop disposal plan with government agencies.
- ☐ Obtain permits, as required.
- ☐ Recycle oil/water as much as possible.
- ☐ Dispose of oily debris and soil.

Post Spill Activities:

- ☐ Assess natural resource damages.
- ☐ Restore wildlife habitat
- ☐ Conduct post spill review.
- ☐ Revise Oil Spill Response Plan, if necessary.

FIGURE 2-4
OIL SPILL REPORT FORM

Portland address: Pacific Terminal Service, Inc. – 7900 St. Helens Rd. Portland OR 97219
Telephone: (503) 286-9621 or (503) 286-5321 Fax: (503) 286-9794

On-Duty Shift Supervisor: _____

On-Duty Dock Operator: _____

Party Responsible for Spill (if known): _____

Time/Date of Spill: _____
Location of Spill: _____
Quantity Spilled: _____ barrels or gallons
Type of Oil Spilled: _____ (e.g., Bunker, Diesel)

Actions Taken? _____

Discharge Stopped or Contained? _____

Cause of Spill (if known): _____

Potential Environmental Damage: _____

Who has been notified? _____

☐	"911" IN CASE OF INJURY, FIRE OR EXPLOSION	
☐	Facility Manager	503-240-3452
☐	Primary Response Contractor: CRC	503-220-2040
☐	NWG Security	503-286-5250
☐	USCG National Response Center	800-424-8802
☐	Oregon Emergency Management	800-452-0311
☐	EPA Region X	206-553-1263
☐	USCG Marine Safety Office	503-240-9379
☐	PTS, Inc. Spill Response Manager	206-628-0051
☐	NWNG	503-226-4211
☐	US Corp of Engineers	503-326-2479

Spill Category

☐	Minor	Less than 100 gallons or	2.4 barrels
☐	Medium	100 to 10,000 gallons or	240 barrels
☐	Major	10,000 to 1,000,000 gallons or	24,000 barrels
☐	Catastrophic	More than 1,000,000	

Initial notification should not be delayed pending collection of all information

Figure 2-5
OIL SPILL EQUIPMENT RESPONSE TIME

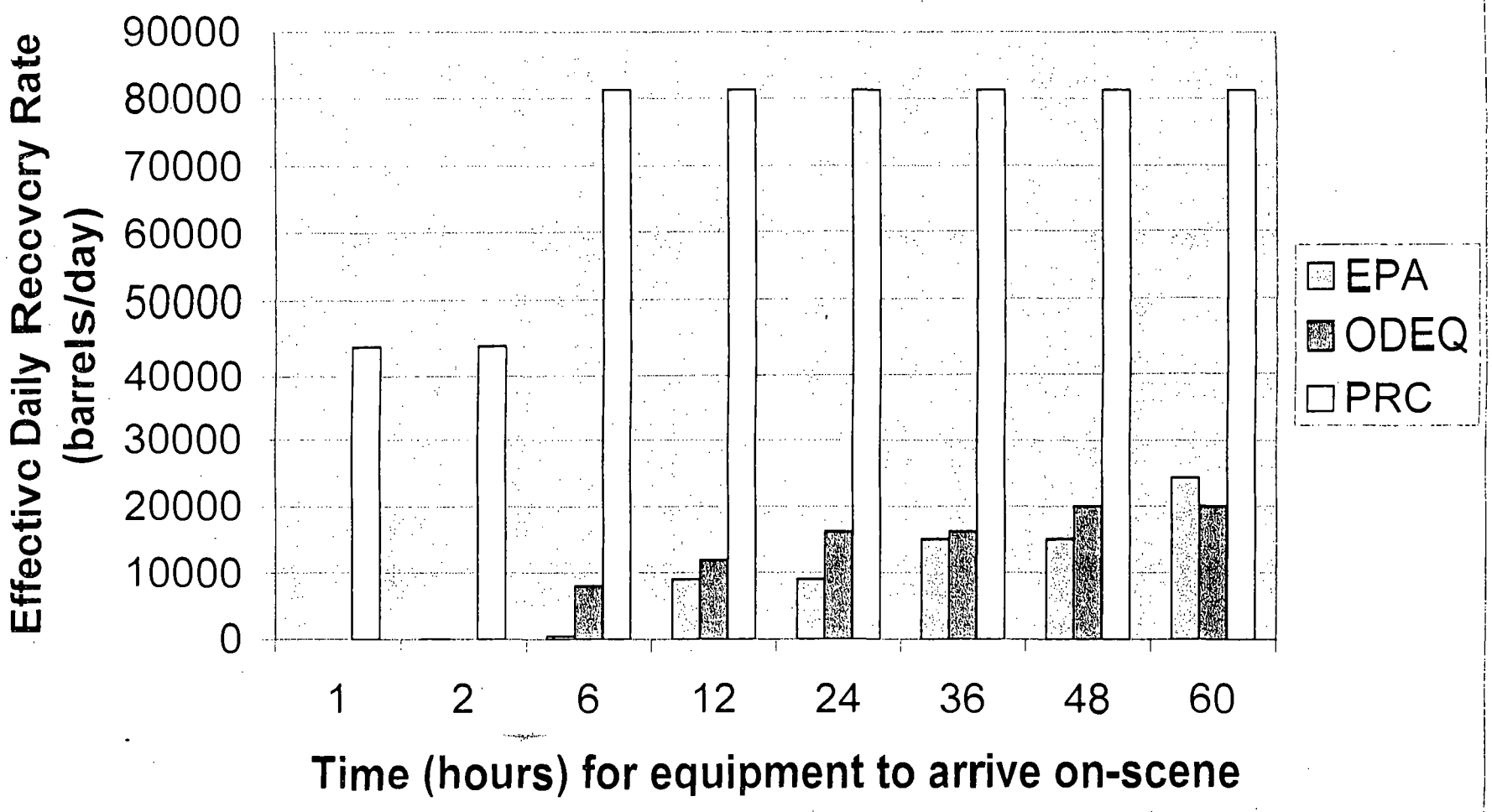


FIGURE 2-6

EVACUATION DIAGRAM

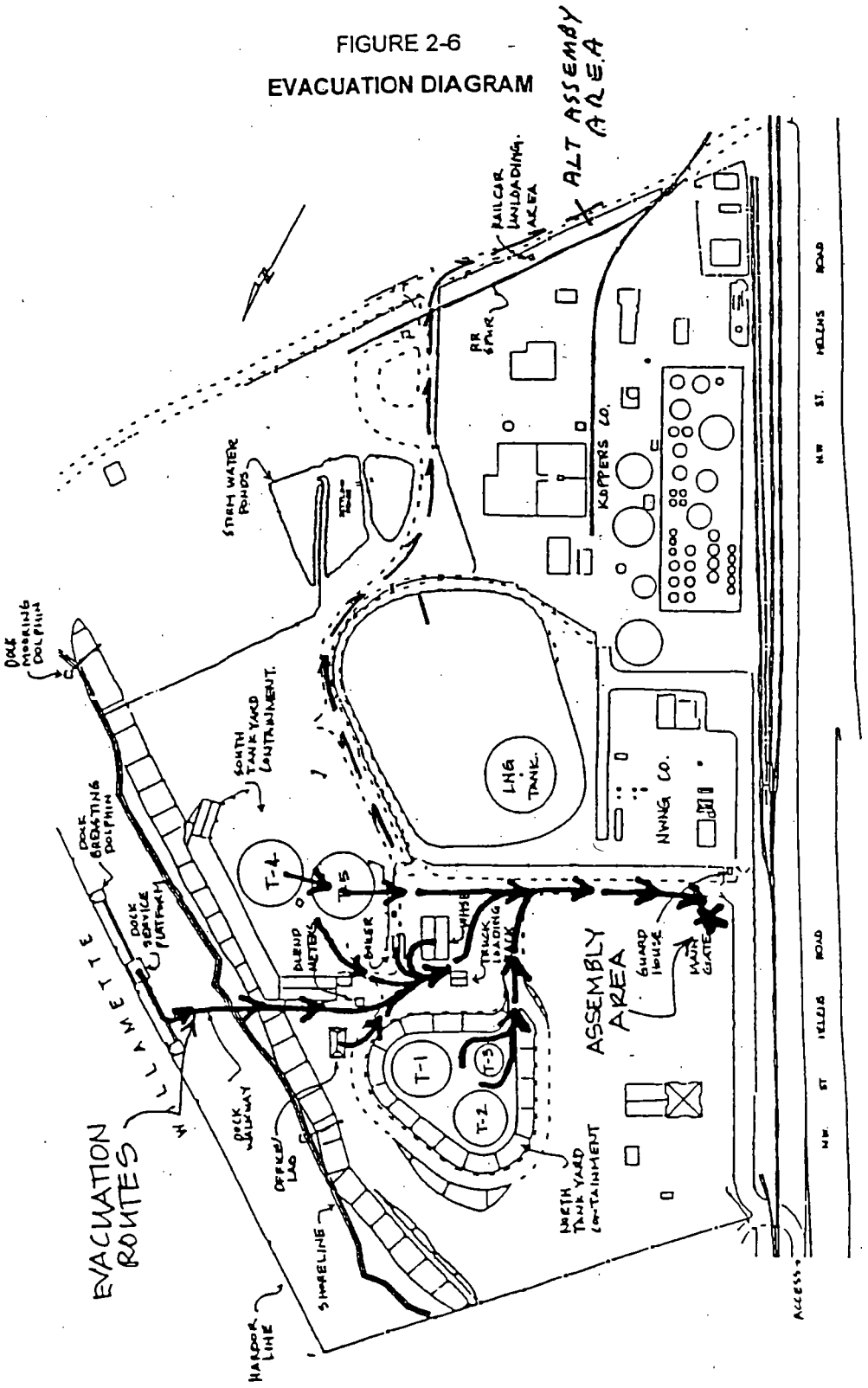
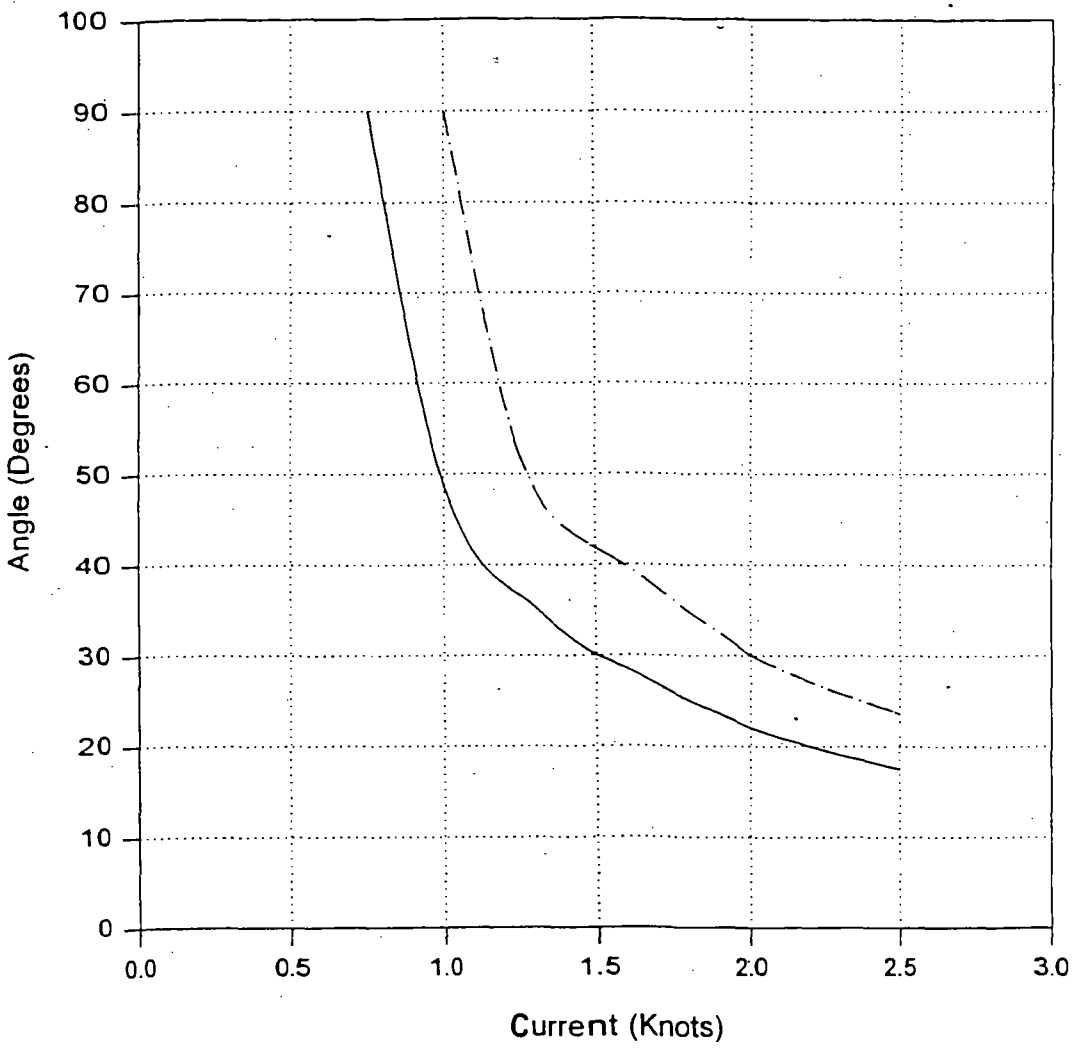


FIGURE 3-1
ANGLE REQUIRED BETWEEN CURRENT AND BOOM



—— Apparent current velocity against boom of 0.75 knots.

—·— Apparent current velocity against boom of 1.0 knot.

FIGURE 3-2

SHORELINE COUNTERMEASURE MATRIX

Heavy Oils (Heavy Crude Oils, No. 6 Fuel, Bunker Crude)

- Heavy oils with little or no evaporation or dissolution
- Water-soluble fraction likely to be <10 ppm
- Heavy contamination of intertidal areas likely
- Severe impacts to waterfowl and fur-bearing mammals (coating and ingestion)
- Long-term contamination of sediments possible
- Weathers very slowly
- Dispersion seldom effective
- Shoreline cleanup difficult under all conditions

SHORELINE TYPE CODES

1 Exposed Wave-cut Cliffs, Seawalls and Piers
2 Exposed Wave-cut Platforms
3 Fine- to Medium-grained Sand Beaches
4 Coarse-grained Sand to Gravel Beaches
5 Mixed Sand and Gravel (or Shell) Beaches
6 Gravel Beaches and Rip-rap Structures
7 Exposed Tidal Flats
8 Sheltered Rocky Shores and Sheltered Man-made Structures
9 Sheltered Tidal Flats
10 Salt Marshes

SHORELINE TYPES

COUNTERMEASURE	1	2	3	4	5	6	7	8	9	10
1) No Action	A	A					A		A	A
2) Manual Deons Removal		A	R	R	R	R	P	R	R	R
3) Passive Collection (sorbents)	R	R	R	R	R	A		R	A	A
4) Deons Removal With Heavy Equipment			R	R	H	P		A		
5) Trenching (recovery wells)			P	P	P					
6) Sediment Removal			P	P	P	P				
7) Cold Water Flooding (deluge)		A	A	A	A		A	A	A	A
8) Cold Water Washing										
a) Low Pressure (<50 psi)	A	A	P	P	A	A		A		P
b) High Pressure (50 - 100 psi)	A			P	P	A				
9) Warm Water Washing (ambient to 90°F)	A	A	P	P	P	P		A		
10) Hot Water Pressure Washing (>90°F)	A					P				
11) Slurry Sand Blasting	A					P				
12) Vacuum	A	A	A	A	A	A	A	A	A	A
13) Cutting Vegetation*								P		P
14) Chemical Treatment†										
a) Oil Stabilization			A	P	P		P		P	
b) Protection of Beaches			P	P	P	P				
c) Cleaning of Beaches			P	P	P	P		P		
15) Burning†	P	P	A	A	A	P				P
16) Nutrient Ennancement†			A	A	A	P	P	A	A	A
17) Microbial Addition†			A	A	A	P	P	A	A	A
18) Sediment Reworking†			A	A	P	A				
19) Shore Removal and Reolacement†			P	P	P	P				

* Cutting will depend upon time of year. Consider only if nesting of birds possible.
† Requires State approval for all cases. RRT approval also required for federalized spills.
R - Recommended - May be preferred alternative. Method which best achieves the goal of minimizing destruction or injury to the environment.
A - Applicable - Viable and possibly useful but may result in limited adverse effects to environment.
P - Possible - Effectiveness and possible harm to environment would have to be carefully evaluated.
Do Not Use

This countermeasure matrix is only a general guide for removal of oil from shoreline substrates. It must be used in consultation with the State and/or Federal OSC's in conjunction with field observations and on-site advice. The countermeasures listed are not necessarily the best under all circumstances, and any listed technique may need to be used in conjunction with other techniques (including ones not listed herein). The State OSC, operating in a manner not in conflict with the FOSC's authorization, has the responsibility for and authority to determine which countermeasure(s) are appropriate for the various situations encountered. Other countermeasures may be considered on a case-by-case basis consistent with the recovery and protection of the State natural resources and subject to the approval of the OSC's

FIGURE 3-3

SHORELINE COUNTERMEASURE MATRIX

Light Oils (Diesel, No. 2 Fuel Oils, Light Crudes)

- Moderately volatile; will leave residue (up to 1/3 of spilled amount)
- Moderate concentration of toxic (soluble) compounds
- Will "oil" intertidal resources with long-term contamination potential
- Has potential for subtidal impacts (dissolution, mixing, sorption onto the suspended sediments)
- No dispersion necessary
- Cleanup can be very effective

SHORELINE TYPE CODES

1 Exposed Wave-cut Cliffs, Seawalls and Piers
2 Exposed Wave-cut Platforms
3 Fine- to Medium-grained Sand Beaches
4 Coarse-grained Sand to Gravel Beaches
5 Mixed Sand and Gravel (or Shell) Beaches
6 Gravel Beaches and Rip-rap Structures
7 Exposed Tidal Flats
8 Sheltered Rocky Shores and Sheltered Man-made Structures
9 Sheltered Tidal Flats
10 Salt Marshes

COUNTERMEASURE	SHORELINE TYPES 1	2	3	4	5	6	7	8	9	10
1) No Action	P	P	A	A	P	A	R	P	A	A
2) Manual Debris Removal	▒	A	A	A	P	A	P	A	P	P
3) Passive Collection (sorbents)	R	R	R	R	R	R	A	R	A	A
4) Debris Removal With Heavy Equipment	▒	▒	A	P	P	P	▒	▒	▒	▒
5) Trenching (recovery wells)	▒	▒	P	P	P	P	▒	▒	▒	▒
6) Sediment Removal	▒	▒	A	A	P	▒	▒	▒	▒	▒
7) Cold Water Flooding (deluge)	A	▒	A	A	A	A	P	A	▒	▒
8) Cold Water Washing	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒
a) Low Pressure (< 50 psi)	A	A	▒	P	A	A	▒	A	▒	▒
b) High Pressure (50 - 100 psi)	▒	▒	▒	▒	▒	P	▒	▒	▒	▒
9) Warm Water Washing (ambient to 90°F)	A	A	▒	P	P	A	▒	P	▒	▒
10) Hot Water Pressure Washing (> 90°F)	P	▒	▒	▒	▒	P	▒	▒	▒	▒
11) Slurry Sand Blasting	P	▒	▒	▒	▒	P	▒	▒	▒	▒
12) Vacuum	A	A	A	A	A	A	A	A	A	A
13) Cutting Vegetation*	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒
14) Chemical Treatment'	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒
a) Oil Stabilization	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒
b) Protection of Beaches	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒
c) Cleaning of Beaches	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒
15) Burning'	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒
16) Nutrient Enhancement'	▒	▒	P	P	P	▒	▒	P	P	P
17) Microbial Addition'	▒	▒	P	P	P	▒	▒	P	P	P
18) Sediment Reworking'	▒	▒	A	P	P	▒	▒	▒	▒	▒
19) Shore Removal and Replacement'/Berm Relocation	▒	▒	P	P	P	▒	▒	▒	▒	▒

* Cutting will depend upon time of year. Consider only if reoiling of birds possible.
' Requires State approval for all cases. RRT approval also required for federalized spills.
R - Recommended - May be preferred alternative. Method which best achieves the goal of minimizing destruction or injury to the environment.
A - Applicable - Viable and possibly useful but may result in limited adverse effects to environment.
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▒ Do Not Use

This countermeasure matrix is only a general guide for removal of oil from shoreline substrates. It must be used in consultation with the State and/or Federal OSC's in conjunction with field observations and on-site advice. The countermeasures listed are not necessarily the best under all circumstances, and any listed techniques may need to be used in conjunction with other techniques (including ones not listed herein). The State OSC, consisting in a manner not in conflict with the FOSC's authorization, has the responsibility for and authority to determine which countermeasure(s) are appropriate for the various situations encountered. Other countermeasures may be considered on a case-by-case basis consistent with the recovery and protection of the State natural resources and subject to the approval of the OSC's.

FIGURE 3-4

SPILL CONTAINMENT BOOM STRATEGY

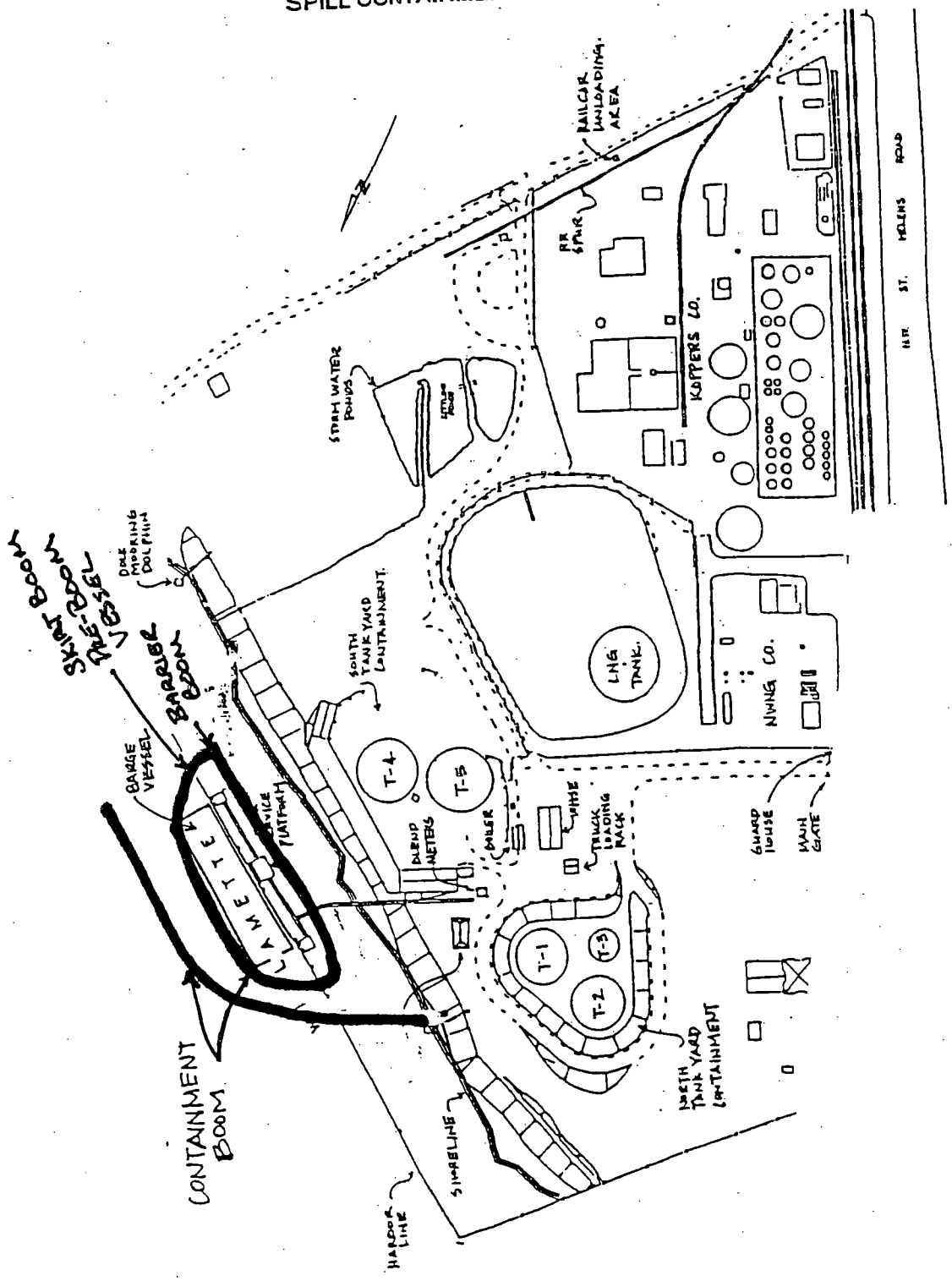


Figure 4-1
Pacific Terminal Services, Inc.
Oil Spill Drill Report

Type of Drill (Check one or more):

___ Notification
___ Equipment Deployment, Announced
___ Equipment Deployment, Unannounced
___ Spill Management Team Tabletop
___ Complete Plan

Component(s) of Oil Spill Plan Exercised (Check all that apply):

___ Notification
___ Communications
___ Staff mobilization
___ Formation of Unified Command
___ Operation of Incident Command System
___ Controlling spill/mitigating damages
___ Assessment of spill
___ Containment
___ Recovery
___ Protection of sensitive areas
___ Documentation

Drill Goals and Objectives: _____

_____

_____

Drill Coordinator: _____ Date of Drill: _____

Drill Participants: _____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

Goverment Agency Involvement:

List of Equipment Deployed:

Summary of Lessons Learned:

Recommendations for changes to Oil Spill Plan:

Certification: _____ Facility Manager Date: _____

Report prepared by: _____ Date: _____

Note: Keep drill records at facility for 5 years from date of drill.

FIGURE 5-1

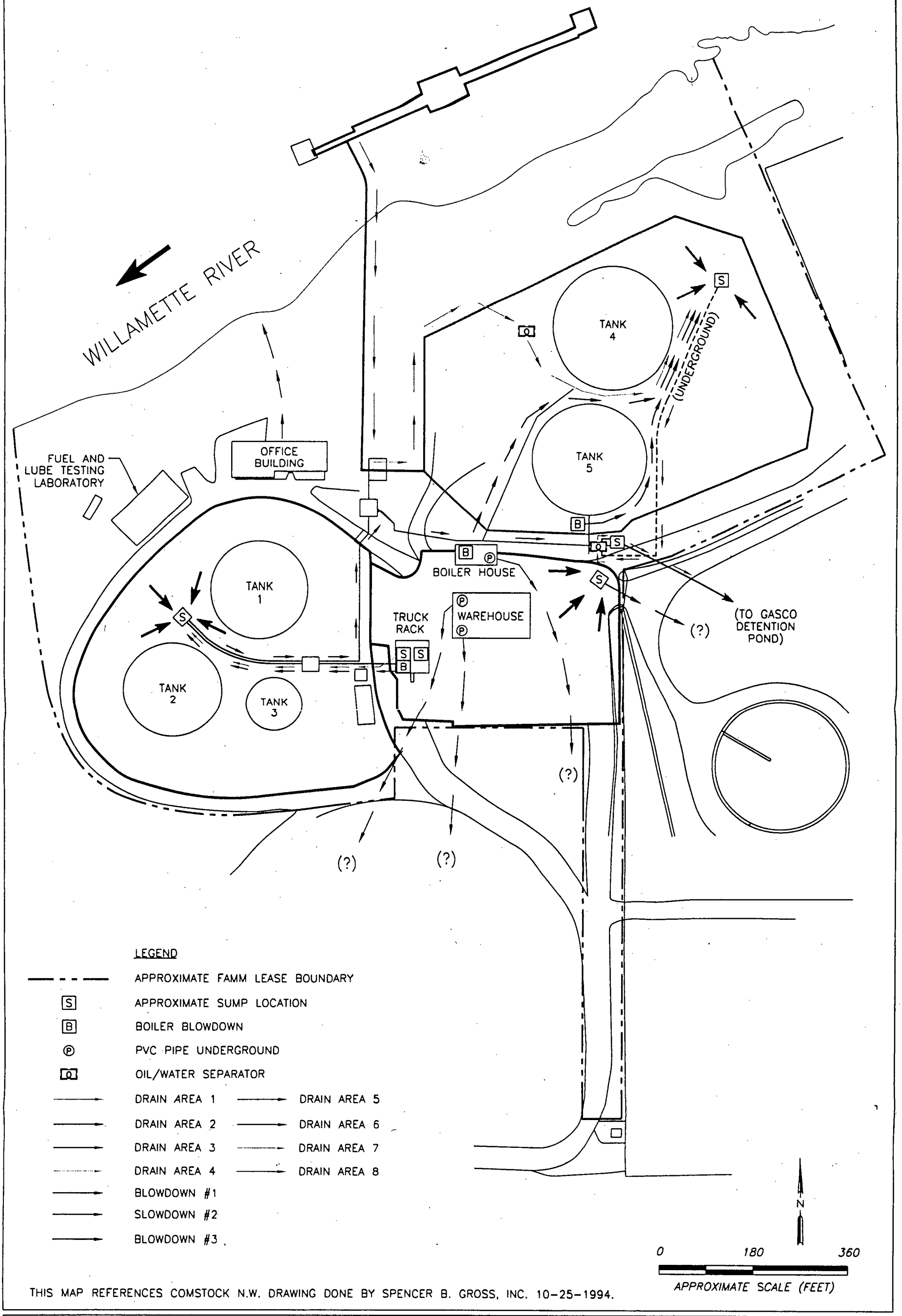
EQUIPMENT INSPECTION CHECKLIST AND LOG

TANK INSPECTION CHECKLIST	COMMENTS
Check tanks for leaks, specifically looking for: • Drip marks, (evidence of overflow) • Discoloration on the tanks, • Puddles of oil on the ground, • Signs of corrosion or rust • Cracks, or • Localized dead vegetation.	
Check foundation for: • Cracks, • Discoloration, • Puddles of oil on the ground, • Settling, • Gaps between the tank and the foundation, and • Damage caused by vegetation roots.	
Check piping valves and pumps for: • Proper operation • Droplets of oil, • Discoloration on piping, • Corrosion, • Sagging of pipeline between pipe supports, • Signs of seepage at valves, flanges and seals, and • Localized dead vegetation.	

SECONDARY CONTAINMENT INSPECTION CHECKLIST	COMMENTS
Check secondary containment and retaining wall for: • Accumulated precipitation and available capacity, • Cracks in the wall or floor, • Discoloration, • Puddles of oil inside containment, • Corrosion, and • Operation of sump pumps, • Debris	

RESPONSE EQUIPMENT INSPECTION CHECKLIST	COMMENTS
• Inventory, by item and quantity) • Storage location, • Accessibility (time to access and deploy), • Operational status and condition, • Date of last test and testing frequency, • Shelf life (current age and expected replacement dale).	

Inspector: _____ Date: _____



LEGEND

- APPROXIMATE FAMM LEASE BOUNDARY
- [S] APPROXIMATE SUMP LOCATION
- [B] BOILER BLOWDOWN
- Ⓟ PVC PIPE UNDERGROUND
- [Q] OIL/WATER SEPARATOR
- DRAIN AREA 1
- DRAIN AREA 2
- DRAIN AREA 3
- DRAIN AREA 4
- DRAIN AREA 5
- DRAIN AREA 6
- DRAIN AREA 7
- DRAIN AREA 8
- BLOWDOWN #1
- SLOWDOWN #2
- BLOWDOWN #3

THIS MAP REFERENCES COMSTOCK N.W. DRAWING DONE BY SPENCER B. GROSS, INC. 10-25-1994.

SECOR
International Incorporated
015

EXISTING STORMWATER & BOILER BLOWDOWN FLOW
FUEL AND MARINE MARKETING (FAMM)
7900 NW ST. HELENS ROAD
PORTLAND, OREGON

FIGURE: 6-1

JOB#: 015.08844.002 APPR: RSM DWN: KPM DATE: 01/10/01

F:/FILES/PORTLAND/08844

DWG: 15-8844-0021

TABLE 1

ABOVEGROUND OIL STORAGE TANK CONTENTS AND CAPACITIES
(NOTE 1)

TANK	CONTENTS	YEAR OF INSTALLATION	AVERAGE VOLUME (BARRELS)	CAPACITY (BARRELS)
1	RESIDUAL OIL	1980	30000	60000
2	DIESEL OIL	1980	10000	60000
3	RESIDUAL OIL	1980	10000	20000
4	RESIDUAL OIL	NOTE 2	40000	80000
5	RESIDUAL OIL	NOTE 2	8000	55000
6	DIESEL OIL	1988	6	12
7	RESIDUAL OIL	1993	250	475
TOTAL				275487

NOTE:
1. There are no underground fuel oil storage tanks at the facility.
2. Year of Installation is unknown. Tanks are believed to have been installed prior to 1940.

TABLE 2

ON-SITE OIL SPILL RESPONSE EQUIPMENT LIST

(Phase I (1st Hour) Emergency Response and Average Most Probable Discharge)

TYPE	QTY	MAKE	MODEL	AGE	LOCATION	STATUS	TIME TO DEPLOY	MAINT	COMMENTS
Containment Boom (ft)	500	Barrier	24	2000	Deployed			Note 1	With fittings, Tow bridals and anchors. (see note 2 for design limits)
	700	Kepner	8 x 12	2000	Deployed			Note 1	
	1000	Kepner	8 x 12	2000	Dock	Note 3 Note 6	Note 4	Note 1	
				2000					
Work Boat	One	Rozema	19 Ft	2000	Terminal	Note3 Note 6	Note 5	Note 1	
Outboard Motors	One	Johnson	115 HP	2000	Boat	Note 3 Note 6	Note 5	Note 1	
Radios:									
UHF Radios	Eight	Motorola	2 Watts	1988	Controi	Daily Use	Note 5	As	With Batteries
Base Unit	One			1988	Room	Daily Use	Note 5	Needed	and Chargers
Sorbent materials:									
Pads (sheets)	200	Varies			Warehouse	Note 3	Note 5		
Sweeps (fl)	200					Note 3	Note 5		
Pom Poms	200					Note 3	Note 5		
Sausage Boom (ft)	50					Note 3	Note 5		
Kitty Litter (bags)	10					Note 3	Note 5		

Notes:

1) Maintained and inspected annually or as needed after use.
2) Boom effectiveness is limited to:
   a) Waves: 1 to 1.5 feet for "chop"
   b) Wind 12 to 15 knots for perpendicular wind.
   c) Current: 1.2 to 1.3 knots for perpendicular current.
3) On Stand-by, dedicated and ready for spill response at facility.
4) Deployed in water at all times.
5) Deployment time less than one hour after spill detection.
6) Boom deployed for all over water oil transfer operations and to meet annual deployment requirements.

TABLE 3

Olympic Tug & Barge

Oil Barge	Length	Beam	Loaded Draft	Built	Black Oil Capacity (bbls)	Diesel Capacity (bbls)
Bernie 112	218.3'	60.0'	12.9'	1982	23,500	2,000
CF Starlight	296.0'	60.0'	18.2'	1982	49,000	-
David 120	296.0'	60.0'	18.2'	1982	44,000	5,000
Dusk	218.4'	60.0'	12.8'	1982	23,500	-
HMS 2000	209.2'	54.0'	11.0'	1994	20,000	1,200
Investigator	214.3'	62.8'	11.25'	1981	14,500	2,500
Lily 101	145.0'	50.0'	8.75'	1980	9,000	-
Meghan 102	145.0'	50.0'	8.75'	1981	9,000	-
Nathan 114	218.4'	60.0'	12.8'	1982	23,500	3,800
Norton	271.7'	76.0'	14.6'	1980	42,000	2,500
Shauna Kay	285.0'	78.0'	15.7'	2000	38,500	-

There is only one loading berth at the facility dock. In general, there is only one transfer to a vessel at a time. However, from time to time, a tug boat, which may be tending a tank barge moored at the dock, may receive diesel oil simultaneously with the transfer to or from the barge. In this case, two facility dock operators are assigned, one to act as the Person-In-Charge of each of the two transfer operations. The oil transfer hose is laid across the barge to the tug boat. The lengths of the tug boats fueled may be as much as 150 feet.

Other operations which may occur simultaneously with barge or ship loading or unloading include:

a) Intertank transfers.
b) Truck loading or unloading, or
c) Rail car unloading

TABLE 4

FACILITY OIL SPILL DRILL/EXERCISE REQUIREMENTS

(Based on PREP Guidelines)

Type of Drill	Notification	Equipment Deployment	Mgmt Team Tabletop	Unannounced	Complete Plan
Frequency	Monthly	Semiannually	Annually	Annually	Triennially
Initiating Authority	Corhpany Policy	Company Policy	Company Policy	Company Policy	Plan Holder
Participating Elements	Facility Personnel & QI	Facility Personnel	Spill Mgmt Team identified in Plan	Facility Personnel	Facility Personnel and Mgmt Team
Scope	Exercise and test communicaoon s	Deploy facility equipment listed in plan	Team organization. communication s. and decision making	Response to Small Spill Scenario quantity	Exercise all components of Response Plan
Objectives	Voice contact with QI.	Check readiness of equipment and demonstrate ability to deploy and operate. (See Note 2)	Knowledge of plan. notification. communication s. ACP. GRP and coordination with PRC's and gov't agencies.	Demonstrate notifications. and timely. proper deployment of sufficient equipment	Demonstrate proper response in all areas of Plan (See Note 3)
Certification	Self-certification	Self-certification	Self-certification	Self-certification	Self-certification
Verification	Agency site inspections	Agency site inspections	Agency site inspections	Agency site inspections	Agency site inspections
Records Retention	5 years	5 years	S years	5 years	5 years
Records Location	At Facility	At Facility	At Facility	At Facility	At Facility
Evaluation	Self-evaluation (See Note 1)	Self-evaluation (See Note 11	Self-evaluation (See Note 1)	Self-evaluation (See Note 1)	Self-evaluation (See Note 1)
Alternative Credit	Routine business or actual spill response. if objectives are met and recorded are made.	Actual spill response. if objectives are met and records are made.	Actual spill response. if objectives are met and records are made.	Actual spill response. if objectives are met and records are made.	May tie exercised in segments or all at one time.

Notes:

1. PTSI responsible for correcting deficiencies in the spill response plan discovered during drills.
2. Dysfunctional equipment will be repaired or replaced within 30 days.
3. Demonstrate proper notifications, communications, staff mobilization, formation of a Unified Command, operation of an ICS, mitigation of spill damages, assessment, containment and recovery of discharged oil, protection of environmentally and economically sensitive areas and documentation.

TABLE 5

TYPICAL PHYSICAL PROPERTIES OF OILS

TYPE	SPECIFIC GRAVITY @ 60 F	VISCOSITY CST @ 122 F	MINIMUM FLASH PT DEG F	WDOE TOXICITY INDEX (See note)	MECH INJURY INDEX (See note)	PERSIS-TENCE INDEX (See note)
Bunker C or Residual Oil	1.00	450	150	3	5	5
Intermediate Marine Fuels	0.99	180	140			
Marine Diesel Oil	0.89	4	140			
DIESEL No 2	0.87	2	140	3	4	2

Note: Refer to WAC 173-183-350.

TABLE 6

NOAA LOCAL CLIMATOLOGICAL DATA

NORMALS, MEANS, AND EXTREMES

PORTLAND, OREGON

LATITUDE: 45°36'N LONGITUDE: 122°36'W ELEVATION: FT. GRND 21 BARO 27 TIME ZONE: PACIFIC WBAN: 24229

	Ja	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F:														
Normals														
-Daily Maximum		44.2	50.4	54.5	60.2	66.9	72.2	79.5	75.6	74.2	62.9	52.2	46.4	62.0
-Daily Minimum		33.5	36.0	37.4	40.6	46.4	52.2	59.8	55.8	51.1	44.6	38.6	35.4	44.0
-Monthly		38.9	43.2	46.0	50.4	56.7	62.5	69.7	65.7	62.7	53.6	45.5	40.9	53.0
Extremes								A92						
-Record Highest	50	63	71	80	87	100	100	107	107	105	92	72	64	107
-Year		1986	1988	1947	1957	1983	1992	1965	1967	1986	1987	1975	1980	AUG 1981
-Record Lowest	50	-2	-1	19	29	29	39	43	44	34	26	13	6	-3
-Year		1950	1950	1989	1989	1954	1966	1955	1950	1965	1971	1985	1964	FEB 1950
NORMAL DEGREE DAYS:														
Heating (base 65°F)		809	610	592	438	263	119	35	51	111	333	585	747	4693
Cooling (base 65°F)		0	0	0	0	6	43	119	132	42	0	0	0	333
% OF POSSIBLE SUNSHINE	41	28	38	47	53	57	57	70	66	61	43	28	23	48
MEAN SKY COVER (tenths)	42	8.5	8.2	8.1	7.7	7.2	6.7	4.8	5.2	5.5	7.1	8.2	8.7	7.2
Sunrise - Sunset														
MEAN NUMBER OF DAYS:														
Sunrise to Sunset														
-Clear	42	2.7	3.6	3.0	2.7	4.7	6.3	12.8	11.2	10.2	5.2	2.8	2.1	67.5
-Partly Cloudy	42	3.5	3.7	4.7	5.8	7.2	7.6	8.6	9.5	8.1	7.5	4.2	3.2	73.8
-Cloudy	42	25.8	21.9	23.3	20.5	19.1	16.1	9.6	10.2	11.7	18.3	23.0	25.5	223.9
Precipitation														
.01 inches or more	50	18.3	16.1	17.3	14.0	11.9	9.2	3.8	4.9	7.7	12.5	17.1	18.7	152.1
Snow, Ice pellets														
1.0 inches or more	50	1.1	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	2.3
Thunderstorms	50	0.4	0.1	0.5	0.5	1.5	0.9	0.7	1.0	0.7	0.4	0.3	0.4	7.0
Heavy Fog Visibility														
1/4 mile or less	48	4.3	3.7	3.3	1.1	0.1	0.1	0.1	0.3	1.8	3.6	6.1	4.9	33.3
Temperature °F														
-Maximum														
90° and above	50	0.0	0.0	0.0	0.0	0.3	1.2	3.6	2.7	1.7	0.1	0.0	0.0	10.6
32° and below	50	3.3	0.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.9	3.8
-Minimum														
32° and below	50	13.3	8.3	4.9	1.0	0.1	0.0	0.0	0.0	0.0	0.6	5.1	9.6	42.7
0° and below	50	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
AVG. STATION PRESS.(mb)	18	1018.4	1016.9	1015.4	1016.8	1016.5	1816.3	1096.2	1015.1	1015.4	1017.2	1016.1	1018.1	1016.7
RELATIVE HUMIDITY (%)														
Hour 04	50	86	86	86	86	85	84	82	84	87	90	88	87	86
Hour 10 (Local Time)	50	82	80	73	69	66	65	61	64	62	79	82	84	72
Hour 16	50	76	67	60	55	53	49	45	46	49	63	74	79	60
Hour 22	50	83	81	78	75	74	71	68	70	75	84	84	85	77
PRECIPITATION (inches):														
Water Equivalent														
-Normal		6.16	9.93	3.61	2.31	2.08	1.47	0.46	1.13	1.61	3.05	5.17	6.41	37.29
-Maximum Monthly	50	13.83	9.46	7.52	4.72	4.57	4.06	2.68	4.53	4.30	8.04	11.57	11.13	13.83
-Year		1953	1949	1987	1955	1945	1984	1983	1968	1986	1947	1942	1968	JAN 1953
-Minimum Monthly	50	0.06	0.79	1.10	0.53	0.46	0.03	0.00	T	T	0.19	0.77	1.28	0.00
-Year		1985	1964	1965	1956	1982	1951	1962	1970	1975	1988	1976	1976	JUL 1967
-Maximum in 24 hrs	50	2.61	2.26	1.83	1.47	1.47	1.82	1.09	1.54	2.38	2.18	2.62	2.59	2.62
-Year		1975	1987	1943	1962	1965	1958	1978	1977	1982	1951	1973	1977	NOV 1973
Snow, Ice pellets														
-Maximum Monthly	50	41.4	13.2	12.9	T	0.6	T	0.0	T	T	0.2	8.2	15.7	41.4
-Year		1950	1949	1951	1989	1953	1989		1989	1949	1950	1955	1968	JAN 1950
-Maximum in 24 hrs	50	10.6	5.2	7.7	T	0.5	T	0.0		T	0.2	7.4	8.0	10.6
-Year		1950	1990	1951	1989	1953	1981		1989	1949	1950	1989	1964	JAN 1950
WIND:														
Mean Speed (mph)	42	9.9	9.1	8.3	7.3	7.1	7.2	7.6	7.1	6.5	6.5	8.6	9.5	7.1
Prevailing Direction through 1963		ESE	ESE	ESE	NW	NW	NW	NW	NW	NW	ESE	ESE	ESE	ESE
Fastest Mile														
-Direction (!!)	40	S	SW	S	S	SW	SW	SW	SW	S	S	SW	S	S
-Speed (MPH)	40	54	61	57	60	62	60	53	59	61	88	56	57	88
-Year		1951	1958	1962	1957	1960	1958	1982	1961	1962	1962	1969	1951	OCT 1962
Peak Gust														
-Direction (!!)	33	SW	S	S	S	SW	SW	SW	E	SW	S	S	E	S
-Speed (mph)	33	63*	68	73	63	98	59*	55*	58	51	e104	71	58*	e109
-Date		1980	1965	1971	1973	1971	1973	1983	1966	1963	1962	1981	1972	OCT 02

CLEAN RIVERS
COOPERATIVE, INC.

200 S.W. Market Street,
Suite 190
Portland, OR 97201
Phone: 503-220-2040
Fax: 503-295-3660

www.cleanriverscooperative.com

November 8, 2006

Mr. Troy Goodman
Pacific Terminal Services Inc.
910 SW Spokane Street
Seattle, WA 98134

Letter of Intent to Respond to an **Oil** Spill Incident

Dear Mr. Goodman:

This letter is to acknowledge that Pacific Terminal Services Inc. is a member of Clean Rivers Cooperative, Inc. and that the Cooperative will provide Pacific Terminal Services Inc.with oil containment and recovery services according to the terms and conditions outlined in the Membership Bylaws, as mutually agreed upon by Pacific Terminal Services. Inc. and the Cooperative.

As stated in Article 8.1, The Cooperative shall maintain a statement of emergency procedures to be followed in the event of an oil spill emergency in the Area of Interest involving any Member, for which a Member is or may be legally or contractually responsible, or to which the Cooperative is otherwise contractually obligated to respond.

Best Regards,

Tim Archer

Tim Archer
General Manager

CLEAN RIVERS
COOPERATIVE, INC.
200 S.W. Market
Suite 190
Portland, Oregon 97201

July 2, 2001

Mr. Troy Goodman
Pacific Terminal Services, Inc.
4700 42nd Ave. SW Suite 510
Seattle, WA 98116

Re: Pacific Terminal Services, Inc./Clean Rivers Cooperative, Inc. OSRO Coverage

Dear Mr. Goodman;

This letter is to confirm that, as a member of Clean Rivers Cooperative, Inc., Clean Rivers will provide Oil Spill Response Organization (OSRO) coverage for spills at the Pacific Terminal Services, Inc. Portland, Oregon terminal. As a member in good standings, Pacific Terminal Services, Inc. is authorized to rely on all Clean Rivers response resources in its State and Federal oil spill contingency plans for the Portland, Oregon terminal.

Respectfully,

Brent Way
General Manager
Clean Rivers Cooperative, Inc.

Certificate of Membership

CLEAN RIVERS
COOPERATIVE, INC.

Issued to:

Pacific Terminal Services, Inc.

This is to certify that the above named company is a member in good standing of Clean Rivers Cooperative, Inc. and is therefore entitled to all the rights and privileges thereof.

July 3, 2001

Brent Way, General Manager
Clean Rivers Cooperative, Inc.
Portland, Oregon

APPLICATION FOR

PRIMARY RESPONSE CONTRACTOR

Submitted to:

WASHINGTON DEPARTMENT OF ECOLOGY

Submitted by:

Clean Rivers Cooperative, Inc.
200 S.W. Market, #190
Portland, OR 97201
(503) 220-2040

July 20, 2006

1.0 Primary Response Contractor Information

Clean Rivers Cooperative, Inc. (CRC) is a membership based oil spill response organization consisting of facility operators located on both the Washington and Oregon sides of the Columbia River and the Willamette River. CRC submits the information contained herein as an application to the Washington Department of Ecology for approval to provide primary spill response and clean-up services to our members and vessels enrolled in the Maritime Fire & Safety Association umbrella oil spill contingency plan.

The ensuing pages provide information required for PRC approval according to Washington's Administrative Code (WAC 173-181-092).

Clean Rivers Cooperative, Inc.
200 SW Market, #190
Portland, OR 97201
(503) 220-2040 (24/7 Emergency Number)
Fax: (503) 295-3660
www.cleanriverscooperative.com

Federal Tax Identification Number: 93-0935721

2.0 Executive Summary

CRC was originally formed in 1971 as the Oregon State Oil Spill Cooperative and renamed in 1973. Its original purpose was to allow members to share personnel and equipment in the event of an oil spill. Today, CRC's membership has grown to 23 member companies and we are partnered with the Maritime Fire & Safety Association to provide PRC coverage to vessels enrolled in the MFSA umbrella oil spill contingency plan.

CRC has as its mission: "To cooperatively prepare for, and respond to an oil spill from a member(s) facility and enrolled vessel in a manner which prevents or minimizes damage to the environment."

CRC owns its spill response equipment. This equipment is operated and maintained operated through a response contract with Pacific Northern Environmental, Cowlitz Clean Sweep division (PNE/CCS) of Longview, Washington. PNE/CCS maintains offices in Longview and Aberdeen, Washington and offices in Albany, Astoria and Portland, Oregon.

Personnel listed within this application are a combination of CRC and CCS/PNE personnel, made available under contract.

3.0 Response Capabilities

This section describes CRC's response capabilities, including geographic area of response coverage, types of oil and media handled in the event of a spill.

3.1 Geographic Coverage

CRC has as its area of interest the Snake River up to the Idaho border, the Columbia River from its confluence with the Snake to the mouth of the Columbia and the Willamette River from the mouth to Willamette Falls.

CRC response coverage is the Columbia River from the Washougal River downstream to three miles beyond the Columbia River mouth and the Willamette River from the mouth to Willamette Falls.

CRC will begin mobilization of equipment and personnel within one hour of notification.

CRC can provide oil spill response resources anywhere within our response coverage area within 2 hours of notification.

3.2 Types of Oil

CRC is prepared to handle the following petroleum products:

- Gasoline
- Kerosene
- Diesel/Fuel Oil
- Petroleum Naphtha
- Petroleum Distillates
- Jet Fuel
- Lubricants and Asphalt

3.3 Media Capabilities

CRC is prepared to respond to the following media types:

- Waterways
  Rivers, lakes, streams, ponds, shorelines, beaches and related areas
- Saltwater
- Land/Soils

3.4 Organizational Chain of Command

The following depicts the CRC organizational chain of command, which will be implemented immediately in event of a spill. CRC will work for and report directly to the responsible party and coordinate with governmental agencies. A chart is attached as 3.4-1.

1. Potential Responsible Party (Spiller) – Facility or Enrolled Vessel and/or Governmental Agencies (USCG, WDOE, ODEQ, EPA)

2. Clean Rivers Cooperative, Inc. Response Manager

3. Cowlitz Clean Sweep Response Manager
    a. Response Foreman
        i. Response Technicians
        ii. Temporary Labor
    b. Disposal Technician

3.5 Call Out List

Emergency response activation for CRC and contracted personnel is initiated by calling CRC at (503) 220-2040, which is responsive 24 hours a day, seven days a week. CRC will notify the on-duty Response Manager and personnel from PNE/CCS. The following outlines CRC's emergency response call-out listings:

1. Clean Rivers Cooperative, Inc.	(503) 220-2040 (24/7)
2. On-duty Response Manager	
• Tim Archer	(503) 412-9199
• Ernie Quesada	(503) 209-5305
• Harold Zariing	(503) 252-6460
3. Cowlitz Clean Sweep	(888) 423-6316 (24/7)
4. CCS On-Duty Operations Manager	
• Bob Matson – E.R. Manager	(360) 957-2015
• Scott Gilfillan (PDX)	(360) 957-2018
• Mike Sasso (Longview/Astoria)	(360) 957-2195
• Chad Braaskma (Longview)	(360) 957-2556
• Ken Pearson (Longview/Astoria)	(360) 957-2021

Upon notification the CRC Response Manager will activate the PNE/CCS personnel listed in the spill position and job descriptions as appropriate given the severity of the incident.

3.5 Communications

All Clean Rivers Response Managers and Cowlitz Clean Sweep Managers and Foreman have Nextel cellular communications. In addition, all PNE/CCS personnel are supplied with pagers. When responding, CRC and PNE/CCS will utilize Nextel and VHF radio communications. Note: CRC has response vessels and all response managers (ORC & PNE/CCS) are supplied radios capable of communicating through the MFSA microwave radio system that blankets the Columbia/Willamette River coverage area.

3.6 Emergency Response Personnel.

Table **3.6-1** lists the titles of CRC oil spill response personnel who are appropriately trained and available for oil spill response services.

3.6.1 Spill Response Positions and Job Descriptions:

Clean Rivers Response Manager: Three (**3**) personnel qualified for this position, responsible for the following:

- Direct all contractor oil spill response activities
- Supervise contractor planning and support functions
- Review spill contingency plan(s) periodically to ensure procedures and resources for clean-up operations are current.
- Upon notification, activate contractor personnel as appropriate
- After completing notifications, report immediately to the scene and assume all assigned duties in accordance with the member's oil spill contingency plan and as directed by responsible party.

PNE/CCS:

Response Manager: Six (**6**) personnel qualified for this position.

- Responsible for all site operations
- Works with R/P, State and Federal agencies
- Organizes equipment and personnel
- Works with subcontractors
- Responsible for controlling all project documentation
- Responsible for supplies/services/cost records/hours worked

Safety Manager: Three (**3**) personnel qualified for this position.

- Provides site specific Safety and Health Plan
- Maintains site safety records
- Maintains personnel training records

Managers/Foreman: Twelve (12) personnel qualified for this position.

- Reports to the Operations Manager.
- Responsible for specific operations of crew, equipment, subcontractors

Waste Disposal Technician: Two (2) personnel qualified for this position.

- Coordinate the final disposition of all recovered material, oil, oily debris and other wastes.

Response Technicians/Equipment Operators:
Thirty (30) personnel for the following positions (some personnel may be able to perfonn more than one job)

- Trained work force personnel who perform designated tasks at the direction of Managers and Foreman
  - **Vessel Operators** – Responsible for CRC Response Vessels
  - **Drivers** – Responsible for driving and operating transportation equipment requiring a commercial driver's license (CDL). This would include vacuum trucks, flatbed trailers, container van, roll off container truck, boom truck and dump truck operations.
  - **Heavy Equipment Operator** – Responsible for operation of construction type heavy equipment, including but not limited to backhoes, tacked excavators, dozers, front end loaders, rollers etc. .
  - **Pressure Wash Operator** – Responsible for operation of high pressure cold and hot water washing equipment and the operation of steam washing equipment.
  - **General Laborers** – Responsible for manual labor and cleanup tasks as directed by their supervisor.
  - **Beach Crew** –Responsible for on land cleanup tasks. Tasks may include setting absorbent boom and pads to pick up product, shoveling residue and contaminated debris into poly bags or drums, and other basic labor duties as needed.

3.7 Oil Spill Response Equipment:

All CRC Equipment owned and contracted is listed on the Regional Response Team (RRT) web site at http://rrt10nwac.com/default.asp. All CRC owned equipment is able to be trailered to remote locations and is dedicated to oil spill response.

3.7.1 Training: In addition to the required OSHA 29 CFR 1910.120 HAZWOPER and WAC 296-62-300 training, all personnel associated with the operation of CRC oil spill

response equipment are trained on the operation of this equipment. CRC and PNE/CCS conduct monthly hands-on training on equipment and vessel operations, including deployment of geographic response plans and booming strategies. In addition, all CRC and PNE/CCS response managers are trained in the NIMS Incident Command System. Level of training is reflected in table 3.7-1.

3.7.2 Qualified Personnel: The only equipment owned by CRC that require licenses or certified operators is three (3) tractors a crane truck shown. Operators of these vehicles must have a commercial driver's license (CDL). Currently PNE/CCS has 21 truck drivers holding this license.

4.0 Health & Safety

CRC Safety training complies with all Federal and State safety training requirements.

Clean Rivers Personnel are at a minimum 40 hour Hazardous Waste Operations and Emergency Response (HAZWOPER) trained per 29 CFR 1910.120, annual refreshers and bi-annual first aid/CPR training.

PNE/CCS personnel have at a minimum the following personnel training:

- Personnel have at a minimum of 24 hours training Hazardous Waste Operations and Emergency Response (HAZWOPER) training per 29 CFR 1910.120.
- Response Managers and Foreman have additional 8 hours of supervisor training
- Confined space trained
- Confined space rescue
- Lock out/Tag out
- Personnel are enrolled in a medical monitoring program with Mandatory physicals:
    - Drug screens
    - DOT physicals for CDL drivers
    - CPR classes are offered to all interested personnel
    - All personnel in supervisor roles are CPR trained
- On site training for personnel for:
    - Equipment operations
    - Hydroblasting operations
    - Pressure Washing
    - Use of absorbents, boom
- Monthly onsite safety meetings to discuss concerns directly related to specific work related jobs
- Tailgate safety meetings before jobs

Clean Rivers Cooperative, Inc. has not received any OSHA/WISHA citations and reports, lost time accidents or accident claims in the last five years.

Appendix A

EQUIPMENT DESIGN LIMITATIONS

Boom:

- **6"x 6":** American Marine 12" boom with ASTM "Z" type connectors good for fast water conditions of local rivers, streams and coastal estuaries.
- **8"x12":** American Marine 20" boom ASTM "Z" type connectors good for harbor and open water conditions.
- **10"x16":** Paulson 26" boom ASTM "Z" type connectors good for rough open water conditions.
- **10"x16" Fast Water Boom:** Paulson 26" boom with 16" netting skirt and ASTM "Z" type connectors good for fast open water conditions.
- **12"x18":** American Marine 40" boom ASTM "Z" type connectors good for rough open water conditions.

Skimming Systems:

Weir Skimmers:

- Douglas 18000, Douglas 4200, Slickbar High Capacity, Manta Ray: Effective on light oils and diesel, good for harbor and open water conditions in relative light chop (less than 12"). Must be used in conjunction with pump (Centrifugal, diaphragm and /or vacuum.)
- Desmi "Terminator" Skimmer. Hydraulically driven skimmer ideal for medium to high viscosity products in harbor, open water, and coastal environments.

Drum Skimmer: API drum skimmer effective on light and medium viscosity products in harbor open water conditions in medium chop (less than 18"). Also has heavy oil brush cassette.

Rope Mop Skimmer: Ro-Clean rope mop skimmer, with 100' of rope. Great for recovery of heavy oil in harbor conditions.

Vessels:

- 34' Oil Spill Response Vessels (Clean Rivers 1, MFSA 1, Alliance and Mark Hatfield): Aluminum OSRV's, powered by twin 460 engines with Hamilton Jets. Equipped with Lori 3 brush skimming systems with light and heavy oil brush packs. Has 1000 gallons on board storage. Capable of skimming in up to 3' chop and working in as little as 3' of draft. Vessel has 1000 20" boom on board.

- 32' Fast Response Vessel "Columbia Responder"; Aluminum FRV powered by a single 460 engine with Hamilton jet pump. Capable of working in as little as 3' of draft. Vessel has 1,000' 20" boom on Board.

- 32' Fast Response Vessel "Independence": Aluminum diesel powered FRV with Hamilton Jet pump. Capable of working in as little as 3' of draft. Vessel has 2,000' 12" boom on board.
-
- 30' Oil Recovery Barges (6): 4200 gallon oil recovery barge equipped with Lori 2 brush hydraulically driven brush skimmer. Effective on highly viscous oil and capable of forward skimming in wave heights of up to 3'. Barge has 400' of 12" boom on board.

- 30' Oil Storage Barges (5): 4200 gallon of storage mini barge stored on a trailer.

- 28' Support vessel "Elizabeth Furse": Support vessel for Oil Recovery Barges and ongoing clean-up operations.

- 17'-22' Boston Whaler (3): Support boats for cleanup operations

- 14'-16' John Boats: workboats powered by small outboard engine (15hp - 25hp) for support of near shore clean-up operations.

3.4-1 Organizational Chain of Command

The following depicts the CRC organizational chain of command, which will be implemented immediately in event of a spill. CRC will work for and report directly to the responsible party and coordinate with governmental agencies.

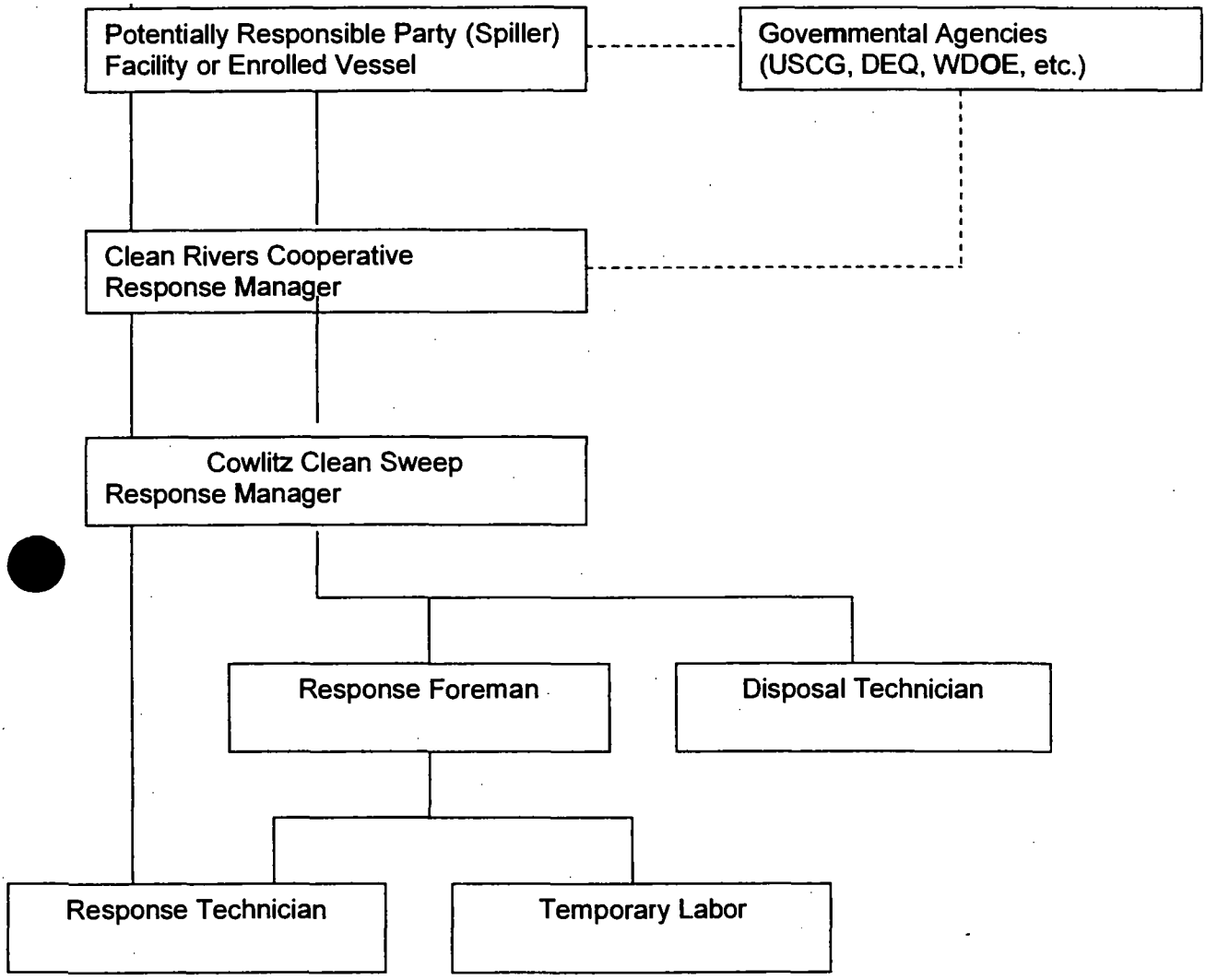


Table 3.6-1 Response Personnel

Job Description	Qty	Name	Company	Training
Response Manager	9	Ernie Quesada	CRC	ICS 400
		Bob Matson	CCS	ICS 400, 80 Hr HAZWOPER
		Chad Braaksma	CCS	ICS 300, 80 Hr HAZWOPER
		Harold Zariing	CRC	ICS 400
		Justin Piper	CCS	ICS 200, 80 Hr HAZWOPER
		Ken Pearson	CCS	ICS 400, 40 Hr HAZWOPER
		Mike Sasso	CCS	ICS 420, 80 Hr HAZWOPER
		Scott Gilfillan	CCS	ICS 400, 80 Hr HAZWOPER
		Tim Archer	CRC	ICS 400, 80 Hr HAZWOPER
Response Foreman	12	Barney Hoyt	CCS	80 Hr HAZWOPER
		Chris Comer	CCS	80 Hr HAZWOPER
		Derek Ramsdell	CCS	80 Hr HAZWOPER
		Doug Jacob	CCS	80 Hr HAZWOPER
		Jim Layton	CCS	80 Hr HAZWOPER
		Ken Partridge	CCS	80 Hr HAZWOPER
		Mark Hansen	CCS	80 Hr HAZWOPER
		Matt Worel	CCS	80 Hr HAZWOPER
		Ryan Wild	CCS	80 Hr HAZWOPER
		Steve Johnson	CCS	80 Hr HAZWOPER
		Todd Partridge	CCS	80 Hr HAZWOPER
		Todd Ward	CCS	80 Hr HAZWOPER
Response Technician	30	Jeff Bauman	CCS	24 Hr HAZWOPER
		Arby Lewis	CCS	80 Hr HAZWOPER
		Barry Merchant	CCS	40 Hr HAZWOPER
		Chris Royster	CCS	40 Hr HAZWOPER
		Darren Crookshank	CCS	24 Hr HAZWOPER
		Dave Miller	CCS	40 Hr HAZWOPER
		David Kent	CCS	40 Hr HAZWOPER
		Dean Gunder	CCS	40 Hr HAZWOPER
		Don Jewett	CCS	80 Hr HAZWOPER
		Don Trachsel	CCS	80 Hr HAZWOPER
		Eric Johnson	CCS	40 Hr HAZWOPER
		Ivan Gregg	CCS	40 Hr HAZWOPER
		James Schrock	CCS	80 Hr HAZWOPER
		Jason Londo	CCS	40 Hr HAZWOPER
		Jason Ramsdell	CCS	80 Hr HAZWOPER
		Josh Scoggin	CCS	40 Hr HAZWOPER
		Ken Pennington	CCS	80 Hr HAZWOPER
		Marisa Chilafoe	CCS	40 Hr HAZWOPER
		Mark Berndt	CCS	80 Hr HAZWOPER
		Mike Smith	CCS	80 Hr HAZWOPER
		Paul Hoyer	CCS	80 Hr HAZWOPER

		Robert McNurlin	CCS	80 Hr HAZWOPER
		Rocky Taylor	CCS	24 Hr HAZWOPER
		Steve McAloney	CCS	40 Hr HAZWOPER
		Steve Nein	CCS	80 Hr HAZWOPER
		Steve Pierson	CCS	8 Hr HAZWOPER
		Steve Whitney	CCS	40 Hr HAZWOPER
		Tim Buckendahl	CCS	24 Hr HAZWOPER
		Tony Smart	CCS	80 Hr HAZWOPER
		Ward Linden Jr.	CCS	80 Hr HAZWOPER

Disposal	2	Tony Miller	CCS	80 Hr HAZWOPER
		Steve Warner	CCS	80 Hr HAZWOPER

Safety	3	Bobby Fike	CCS	80 Hr HAZWOPER
		Matt Brenes	CCS	80 Hr HAZWOPER
		Tim Corcoran	CCS	40 Hr HAZWOPER

Table 3.7-1

Spill Management Personnel

Name	Company	ICS Level
Tim Archer	CRC	400
Ernie Quesada	CRC	200
Kersten Green	CRC	300
Ashley Opsahl (PIO)	CCS	100
Bob Matson	CCS	400
Chad Braaksma	CCS	300
Jennifer Gonzales	CCS	200
Jim Layton	CCS	300
Justin Piper	CCS	200
Kathy Sasso	CCS	300
Ken Partridge	CCS	200
Ken Pearson	CCS	400
Kevin Manzano	CCS	300
Marisa Chilafoe	CCS	800
Mark Hansen	CCS	300
Matt Brenes	CCS	300
Mike Sasso	CCS	420
Scott Gilfillan	CCS	400
Seth Krause	CCS	200
Steve Johnson	CCS	300
Steve McAloney	CCS	300
Steve Warner	CCS	300
Tim Corcoran	CCS	300
Todd Partridge	CCS	300
Tony Miller	CCS	300

Maritime Fire and Safety Association
Columbia River Commmications System
Brief System Description

June, 2006

Adcomm Engineering Company
14631 128th Ave. N.E.
Woodinville, WA 98072
Voice: 206-821-8827
FAX: 206-488-3952

INTRODUCTION

The Maritime Fire and Safety Association (MFSA) Columbia River communications system is described in this document. The MFSA communication system is actually four different systems combined to provide an integrated communication network for communicating on marine and oil splll communication channels. The system provides radio coverage on the lower Columbia and Willamette Rivers from approximately the city of Portland to greater than three miles beyond the Columbia river bar (It is expected radio coverage will be useable out to at least 10 miles beyond the bar.). The purpose of this system is to improve communications with maritime traffic and to provide tactical and command communications during oil spill and related incidents that occur on the Willamette and Columbia rivers..

The communication system consists of four different systems. They are:

Marine Channel Radio System
This system provides communications on various marine channels for communicating directiy to slups and other marine traffic.

Oil Spill Command and Control Radio System
This system provides continuous coverage from the city of Portland to Astoria and will allow mobile units in Portland to communicate directiy with units along the Columbia river.

Oil S[p]ill Tactical Radio System
This system provides a series of radio repeaters that are designed to provide coverage over a local area for the local communications needs of incident response.

Microwave Radio System
This system links all of the radio sites and radio equipment back to the Merchant's Exchange for control and to the radio consoles located there.

The communications system uses four sites located between the city of Portland and the mouth of the river. All sites have the same set of frequencies and basic communications capabillty. They are:

200 Market Street - On top of the building, Merchant's Exchange location

Green Mountain - Located a couple of miles east of Kalama

Nicolai Mountain - Located approximately 12 miles west of Clatskanie Megler

Mountain - Located on a hill at the north end of the Megler bridge.

MARINE CHANNEL RADIO SYSTEM

Figure 1 below is a diagram of the marine channel radio system. The system consists of three base stations located at each site. These base stations will have the following channels:

Base station #1, - Channel 16

Base Station #2 - Channels 11, 13, 14

Base Station #3 - Channels ISA, 80, 81

The base stations will provide some overlapping coverage. Coverage from this system will be si[8]nificandy better than the existing Merchant's Exchange or US Coast Guard system.

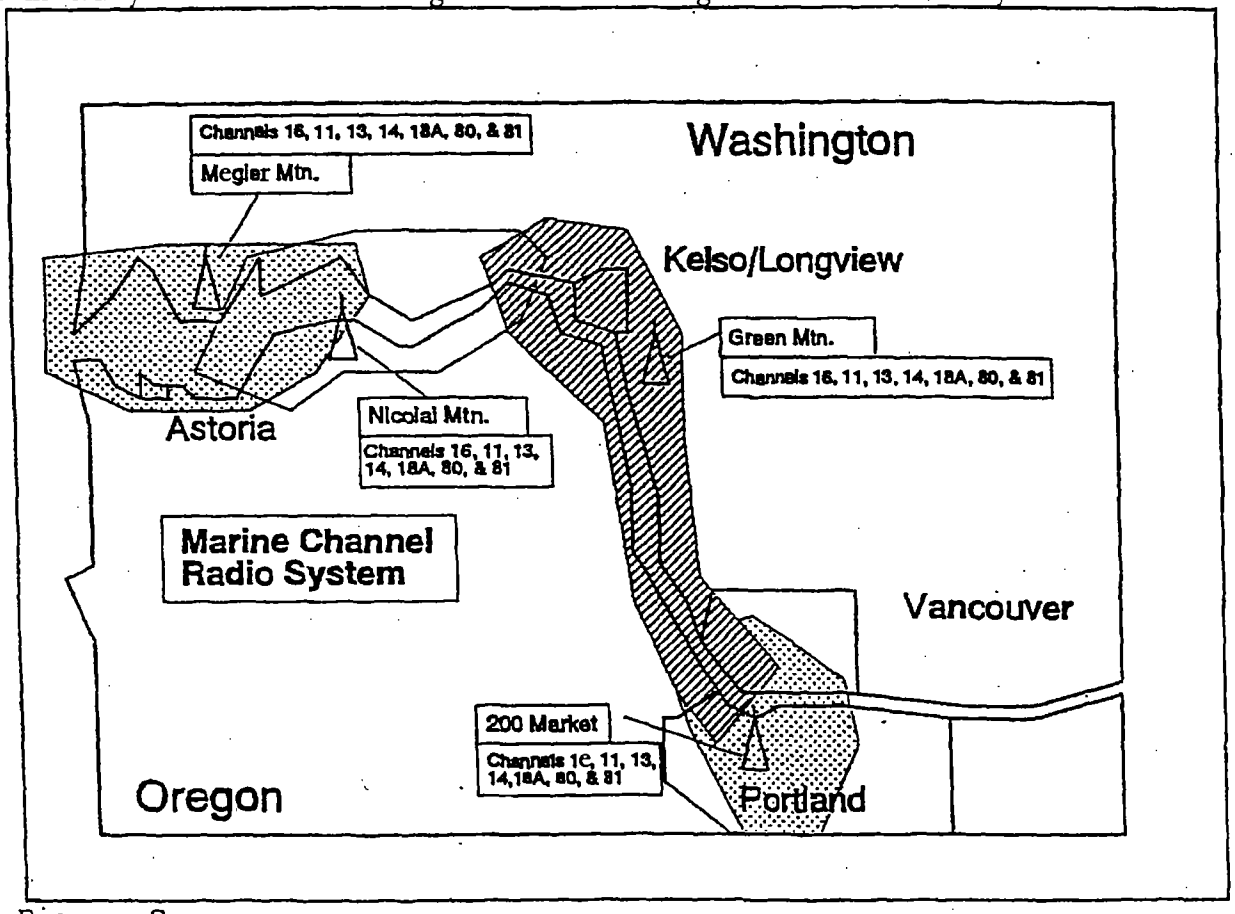


Figure S

OIL SPILL COMMAND AND CONTROL RADIO SYSTEM

Figure 2 below is a diagram of the oil spill command and control radio system. The purpose of this system is to provide a single system that provides continuous coverage along the lower Columbia for command and control. This will allow a mobile unit in Portland to communicate with a mobile unit in Astoria.

This system uses simulcast technology and receiver voting. The four transmitters, one at each site, are turned on at the same time so the transmission is sent from each site simultaneously. The received signal from the mobile units is voted or selected based on the site that is receiving the best signal. The system is configured for repeater operation. This means the signals received from the mobile units are re-transmitted by the transmitters at each site. The frequencies are shown on the system diagram below.

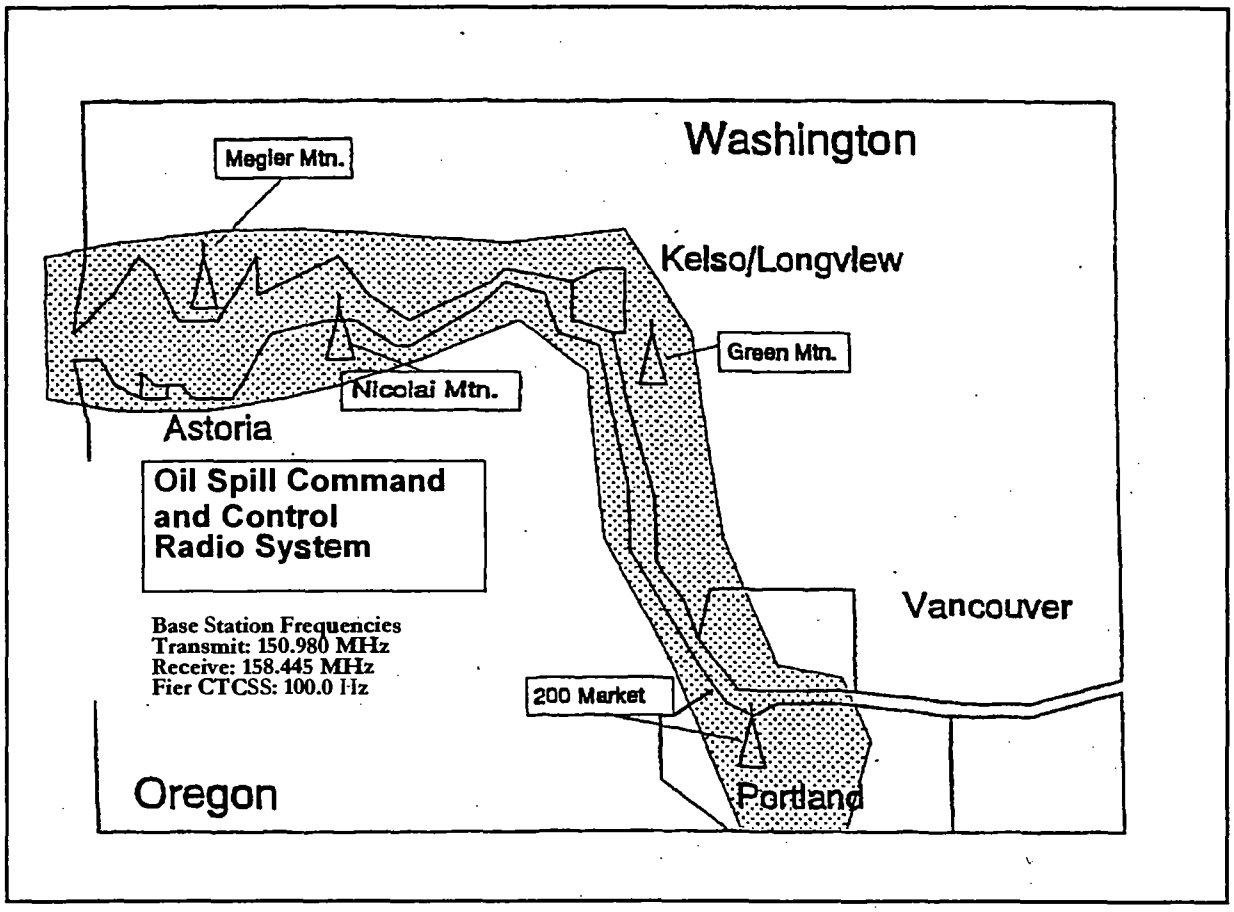


Figure 4

OIL SPILL TACTICAL RADIO SYSTEM

Figure 3 is a diagram of the oil spill tactical radio system. The purpose of this radio system is to provide localized communication capabihty for the communications needs of tactical operations over smaller areas.

This system consists of four repeaters all operating on the same frequency. Each repeater has a different continuous tone coded squelch system (CTCSS) tone to activate it. Because repeater operation is used, it will allow for extended unit-to-umt communications over the areas covered by the individual repeater. Care will need to be used when using the repeaters because some interference between repeaters is possible. However, terrain blocking will allow selected repeaters to be used without interference. For example, the repeater at 200 Market and the repeater at Megler can be used without causing interference. The frequencies of the repeaters and the CTCSS tones are shown in the diagram below.

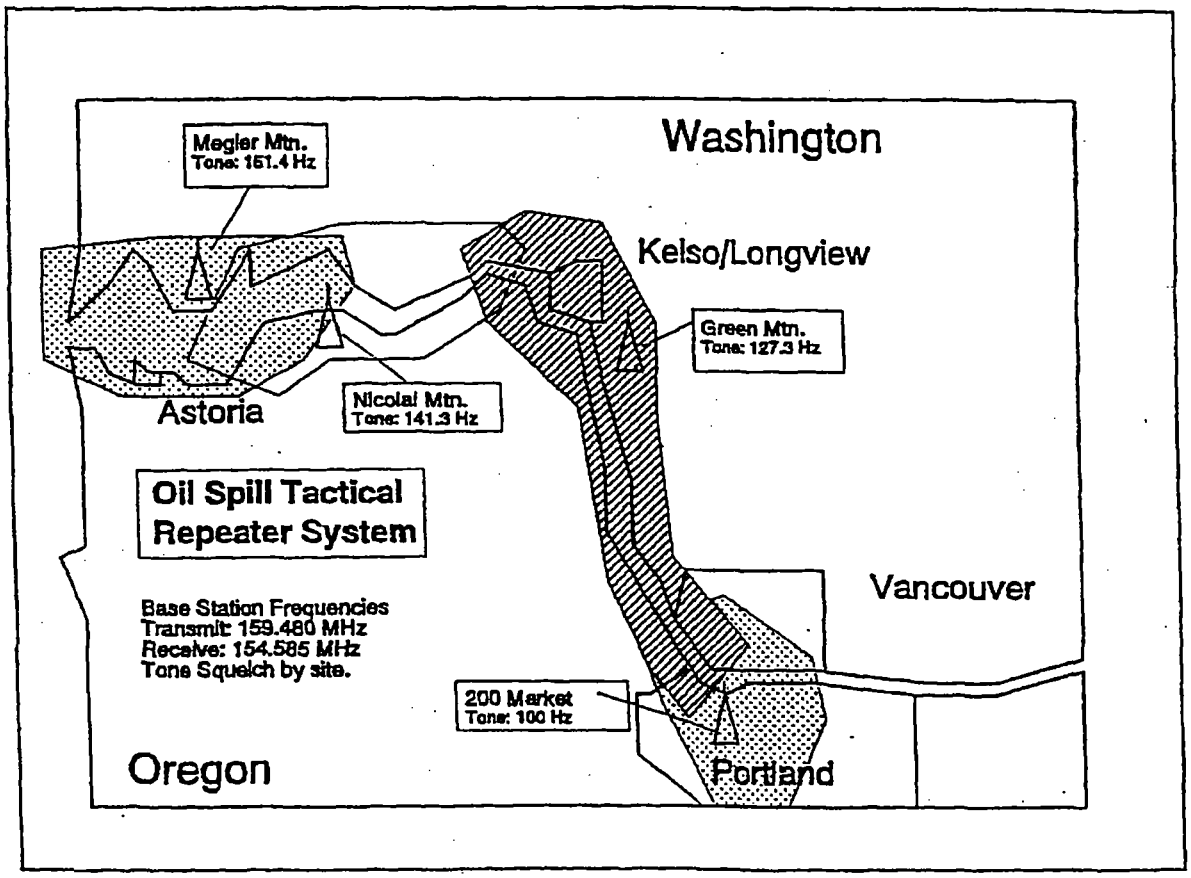


Figure 5

MICROWAVE SYSTEM

The final system is the microwave system. This system connects each of the four sites together and provide circuits for voice audio and radio base station and repeater control. The microwave system is capable of 96 circuits with approximately 25 circuits currendy being used. The system has the potential to be expanded. The microwave path from the city of Portland to Green Mountain uses the 6 GHz band. The remaining two paths from Green Mountain to Megler use the 2 GHz band.

MFSA Communications System Frequencies

Marine Base Station #1

Designation	Frequency	Use
Channel 16	156.800 MHz	Safety and Calling

Marine Base Station # 2

Designation	Frequency	Use
Channel 11	156.550 MHz	Commercial
Channel 13	156.650 MHz	Bridge-to-Bridge
Channel 14	156.700 MHz	Port Operations

Squelch: Transmit - No tone, Receive - Carrier

Marine Base Station #3

Designation	Frequency	Use
Channel 18A	156.900 MHz	Commercial
Channel 80	157.025 MHz	Commercial
Channel 81	157.075 MHz	Marine Oil Spill

Squelch: Transmit - No tone, Receive - Carrier

Oil Spill Command And Control Repeater

Repeater Transmit: 150.980 MHz
Repeater Receive: 158.445 MHz
Squelch: Transmit - No tone, Receive - 100.0 Hz

Mobile Transmit: 158.445 MHz
Mobile Receive: 150.980 MHz
Squelch: Transmit - 100.0 Hz, Receive - Carrier

Oil Spill Tactical Repeater

Repeater Transmit: 159.480 MHz Repeater Receive: 154.585 MHz
Squelch: Transmit - 100.0 Hz, Receive -
(All sites)
Market Street (100.0 Hz)
Green Mtn. (127.3 Hz)
Nicolai (141.3 Hz) Megler (151.4 Hz)

Mobile Transmit: 154.585 MHz
Moblle Receive: 159.480 MHz
Squelch: Transmit - Market Street (100.0 Hz), Receive (100.0 Hz)
Green Mtn. (127.3 Hz) (All Sites)
Nicolai (141.3 Hz)
Megler (151.4 Hz)

MSRC
Marine Spill Response Corporation

Judith A. Roos
Marketing and Customer Service Manager

September 20, 2000

Via Fax: 914-253-4190

Mr. Radcliffe L. Wilson
Manager, Environmental, Health & Safety
Fuel and Marine Marketing LLC
2000 Westchester Avenue
White Plains, New York 10650

Re: Coverage under MSRC Service Agreement

Dear Mr. Wilson:

This is to confirm that Fuel and Marine Marketing LLC is currently covered under a spill response "Service Agreement" between the Marine Spill Response Corporation and Texaco Inc.

If you have any questions please do not hesitate to call me at 703-326-5617.

Sincerely,

Judith A. Roos

Cc: Larry Straatmann, Texaco Inc. (Fax 504-680-1417)

Location	Skimmers	Effective Daily Recovery Capacity BBL/Day	Boom	Barges
Scanle, WA	1 DOP-250	3,017	60 ft. Simplex	1 - Shallow Water Barge (non-self propelled/400 bbl)
RV Cormorant	2 Marco 3' Belt	21,540	2,100 ft. 20" Kepner	1 - Shallow Water Push Boat
RV Widgeon	1 Marco 1' Belt	3,588	5,200 ft. 30" Zoom boom	90 barrels TS on RV Cormorant
				30 barrels TS On RV Widgeon
				2 Work Boats (14' - 36')
Tacoma, WA	1 Marco 3' Belt	10,764	2,500 ft. 20" Kepner	1 - 21,403 barrel OSRB
RV Plover	1 Marco 1' Belt	3,588	5,400 ft. 30" Zoom boom	67 barrels TS on RV Plover
RV Curlew	1 Lori Brush	4,896	4,000 ft. 30" Acme	3 barrels TS on RV Curlew
RV Brant				7 barrels TS on RV Brant
				1 - 100 barrel mini OSRB
				1 - 7 barrel portable storage tank
				4 Work Boats (14' - 36')
Port Angeles, WA	1 Stress I	15,840	5,280 ft. Sea Sentry II	1 - 4,000 barrel OSRV Storage
W. C. Park Responder	1 Transrec 350	10,567	2,000 ft. Texa Boom	1 - 38,000 barrel offshore barge
RV Shearwater	2 JBF Belt 6001	12,000	2,000 ft. Slickbar	1 - 23,400 barrel offshore barge
RV Arctic Tern	1 JBF Belt 5001	6,000	675 ft. Oil Trawl	1 - Shallow Water Barge (non-self propelled/400 bbl)
RV Pintail	1 Lori LBC Brush	2,592	500 ft. Fire + 400' Guide	1 - Shallow Water Push Boat (26' Munson)
	1 GT-185	1,371	60 ft. Simplex	1,376 barrels TS on RV Shearwater
			4,000 ft. 30" Acme	283 barrels TS on RV Arctic Tern
			2,900 ft. 30" Versatech	7 barrels TS on RV Pintail
			4,800 ft. 20" Kepner	3 - 7 barrel portable storage tanks; total 21 barrels
			2,000 ft. 42" Kepner	6 Work boats (14' - 38')
			500 ft. 3-M Fire boom	
Neah Bay, WA			3,960 ft. Sea Sentry II	1 - Shallow Water Push Boat (34' Munson)
			4,000 ft. Qualitcch Boom	
Astoria, OR	1 GT-185	1,371	9,240 ft. Sea Sentry II	1 - 4,000 barrel OSRV Storage
Oregon Responder	1 Transrec 350	10,567	2,000 ft. Texa Boom	1 - 40,000 barrel offshore barge
	1 Vikoma 3 Weir	5,657	2,000 ft. Slickbar	1 - Shallow Water Barge (non-self propelled/400 bbl)
	1 Aard VAC	3,840	675 ft. Oil Trawl	1 - Shallow Water Push Boat
	1 Walosep W4	3,017	1,216 ft. Vikoma 3 Weir	
	1 Desmi Ocean	3,017	60 ft. Simplex	
	1 Stress I	15,840		
	1 DOP-250	3,017		

MSRC'S Major Equipment - Pacific/Northwest Region

Revised: 7/26/05

Location	Skimmers	Effective Daily Recovery Capacity BBL/Day	Boom		Barges
Everett, WA	1 Walosep W4	3,017	6,600	ft. Sea Sentry II	4 - 500 bbl towable storage bladders
High Volume Port	1 WP-1	3,017	3,650	ft. Texa Boom	1 - Shallow Water Push Boat
RV Sandpiper	1 Vikoma 3 Weir	5,657	4,000	ft. Slickbar	3.5 barrels TS on RV Sandpiper
RV Auklet	1 Sea Wolf	3,017	1,216	ft. Vikoma 3 Weir	7 barrels TS on RV Auklet
	1 Aard VAC	3,840	60	ft. Simplex	2 - 14 barrel ea portable tanks; total 28 barrels
	1 Desmi Ocean	3,017	1,600	ft. 20" Kepner	2 - 24 barrel ea portable tanks; total 4S barrels
	1 Marco 3' Belt	10,764	1,300	ft. 43" Expandl	1 - 7 barrel portable storage tank
	1 Marco 1' Belt	3,588			1 Work Boat (18')
	2 Slickbar Slurp	110			
	1 Lori Brush	3,662			
	1 Desmi DS 150	754			
	1 Desmi DOP 250	2,057			
	2 OMI Rope	96			
	2 Aqua Guard RBS	720			
	1 Poscon 150	754			
	1 Desmi Ocean	2,914			
	1 Morris MI 30	987			
Anacortes, WA	1 DOP-250	3,017	60	ft. Simplex	1 - Shallow Water Barge (self propelled/400 bbl)
RV Royal Tern	1 JBF Belt 5001	6,000	5,500	ft. 20" Kepner	2 - 110 barrel TS ea Rigid Dracones; total 220 barrels
RV Aleution Tern	1 Marco 3' Belt	10,764	13,160	ft. 30" Acme	276 barrels TS on RV Royal Tern
	1 Morris Disc	206	2,900	ft. 30" Versatech	67 barrels TS on RV Aleution Tern
	1 Queensboro	905			1 - 8 barrel portable storage tank
					4 Work Boats (14' -42')
Blaine, WA			2,000	ft. 30" Acme	
			3,200	ft. 30" Versatech	
Bellingham, WA	1 DOP-250	3,017	1,320	ft. Sea Sentry II	1 - Shallow Water Barge (non-self propelled/400 bbl)
RV Western Gull	1 JBF Belt 5001	6,000	60	ft. Simplex	1 - Shallow Water Push Boat (26' Munson)
RV Heron	1 Morris Disc	206	2,000	ft. Slickbar	1 - 11,900 barrel OSRB
RV Grebe	1 Marco 1' Belt	3,588	5,000	ft. 20" Kepner	286 barrels TS on RV Western Gull
	1 Lori Bmsh	3,662	1,000	ft. 30" Versatech	7 barrels TS on RV Heron
					30 barrels TS on RV Grebe
					2 - 8 barrel ea portable storage tanks; total 16 barrels
					1 Work Boat (42')
Fcmdale, WA			6,000	ft. 30" Acme	6,555 Gallons Corexit 9527 dispersant
Pt. Wells, WA			4,000	ft. 42" Ocean boom	
			2,000	ft. 30" Acme	

MSRC'S Major Equipment - Pacific/Northwest Region

Revised: 7/26/05

Location	Skimmers	Effective Daily Recovery Capacity BBL/Day	Boom		Barges
Portland, OR	1 GT-185	1,371	2,000	ft. Slickbar	1 - Shallow Water Barge (non-self propelled/400 bbl)
			60	ft. Simplex	1 - Shallow Water Push Boat
Coos Bay, OR	1 DOP-250	3,017	60	ft. Simplex	1 - Shallow Water Barge (non-self propelled/400 bbl)
	1 Stress I	15,840			1 - Shallow Water Push Boat
Honolulu, HI	2 Walosep W4	6,034	9,900	ft. Sea Sentry II	1 - 4,000 barrel OSRV Storage
Hawaii Responder	1 Transrec 350	10,567	2,000	ft. Texa Boom	1 - 40,000 barrel offshore barge
	1 Vikoma 3 Weir	5,657	8,000	ft. Slickbar	4 - 500 bbl towable storage bladders
	1 GT-185	1,371	675	ft. Oil Trawl	2 - Shallow Water Barge (non-self propelled/400 bbl)
	1 Stress I	15,840	1,216	ft. Vikoma 3 Weir	2 - Shallow Water Barge (self-propelled/400 bbl)
	1 DOP-250	3,017	500	ft. Fire + 400' Guide	2 - Shallow Water Push Boats
			350	ft. Qualitech Boom	
Hilo, HI	1 Desmi Ocean	3,017	1,980	ft. Sea Sentry II	3 - Shallow Water Barges (non-self propelled/400 bbl)
			2,000	ft. Slickbar	1 - Shallow Water Barge (self-propelled/400 bbl)
			400	ft. Qualitech Boom	3 - Shallow Water Push Boats
					2 - 500 bbl towable storage bladders
					1 - 3,000 bbl towable storage bladder
					1 - (57 bbl) Fast Tank
Total Equipment	63 Skimmers	293,156	162,893	Feet	3 - Responder Class OSRVs with a total of 12,000 bbls storage
					15 - Smaller OSRVs with a total of 2,540 bbls storage
					6 - Offshore Barges with 174,703 bbls storage
					1 - Small OSRB with 100 bbls storage
					11 - Shallow Water Barges (non-self propelled) (4,400 bbls storage
					4 - Shallow Water Barges (self propelled) (1,200 bbls storage)
					12 - Shallow Water Push Boats
					11 - Towable Storage Bladders (8,000 bbls storage)
					14 - Storage Tanks/Bladders (355 bbls storage)
					18 - Work Boats

MSRC'S Major Equipment - Pacific/Northwest Region

Revised: 7/26/05

Pacific/Northwest Region
1330 Industry Street, Suite 100
Everett, WA 98203-7123
Phone: 425/252-1300
Fax: 425/339-1229

MSRC
Marine Spill Response Corporation

Revised 6/30/06

PACIFIC/NORTHWEST REGION

Vice President
Richard Wright
425/304-1569

Telecommunications & Information Systems Manager
Mike Condon
425/304-1556

Telecommunications & Information Systems Supervisor
Rich Braun
425/304-1554
Louis Gardino
Paul Smith
(Vacancy)

Engineering, Logistics & Maintenance Administrator
Marin Streeter
415/304-1561

Region Controller
Laqueta Allison
425/304-1511

Safety, Environmental, Health & Security Administrator
Stuart Larson
425/304-1547

Region Response Manager
Denny Quirk
360/293-8982

Human Resources Administrator
Laura Eaton
425/304-1505

Administrative Assistant
Ann Ediund
425/304-1521

Contract Administrator
Kris Calvin
425/304-1542

Engineering & Maintenance
Mike Miller
Response Supervisor
Chris Bronson
Rick Fox
Tony Tran
(Vacancy)

Area Response Manager
Joe Bowles*
425/304-1514

Training/Response Manager
Jeff Kainz
425/304-1560

ANACORTES, WA
Dan Smiley
Response Supervisor
360/293-8523
Christy Hughes
Daniel Klinnert
Mike Waage
(Vacancy)

BELLINGHAM, WA
Ken Schacht
Response Supervisor
360/733-3774
Peter Marcus
Jesse McCully
Hylas Twiford
Robert Wesson

Area Response Manager
Craig Cornell
360/417-9287

HAWAII RESPONDER
John Seitenright
Response Supervisor
808/847-7144
Mike Batten
Derek Leong
Ruel Lozano
Eddy Paine
Maya Uyehara
(Vacancy)

OREGON RESPONDER
Bill Roach
Response Supervisor
503/325-6330
James Brittenbam
Kevin Duff
Lonnie Linton
Christopher Rogers

TACOMA, WA
Herb Gulliford
Response Supervisor
253/572-9805
Jason Connelly
Klete Freudenstein
Jack Jones
Vladimir Shedrin

SEATTLE, WA
Cameron Houck
Response Supervisor
206/622-5590
Robert Allen
Daniel Helstad
Larry Ryan

SHEARWATER
James Henry
Response Supervisor
360/417-9288
Matthew Brown
Art Hoffman
Matthew Parker
Kevin Peterson
Shawn Sinskie
Michael Thill

W.C. PARK RESPONDER
Jim Haugen
Response Supervisor
360/417-3935
Daniel Boldt
Norm Busch
Kara Luna
Rhion Nevaril
Greg Potts
David Young

* Also Responsible for Inland Areas within the Pacific/Northwest Region.

MSRC PACIFIC NORTHWEST REGION

Updated 9/29/2005

Phone: 425-252-1300 • Fax: 425-339-1229

NAME	TITLE	OFFICE	CELL	PAGER	PAGER 2	HOME
Allen, Bob	Master Responder	206-622-5590	206-375-3629	206-986-3606		206-542-3357
Aiiison, Laqueta	Region Conlroiier	425-304-1511	206-940-0115	425-514-2570		425-355-3519
Batten, Michael	Lead Responder	808-847-8144	808-664-5280	808-279-0942		808-384-6723
Boldt, Daniel	Master Responder	360-417-5437	206-375-3631	206-991-3381		360-452-4102
Bowles, Joe	Response Supervisor	425-304-1514	425-870-7820	425-514-1450		425-355-5106
Braun, Richard	T&IS Supervisor	425-304-1554	425-308-5854	425-514-1683		425-303-2570
Brillenham, James	Master Responder	503-325-6330	503-338-0719	503-338-1072	503-909-1733*	503-717-8960
Bronson, Chris	Master Responder	425-304-1534	425-293-1217	425-514-1690		206-546-8252
Busch, Norm	Lead Responder	360-417-5437	360-808-8324	360-582-8402	425-514-2666*	360-417-9202
Calvin, Kris	Contract Administrator	425-304-1542	425-308-0178	425-267-8871		425-290-9299
Clapper, Wayne	Engineering, Logistics & Maintenance Adm	425-304-1523	425-308-0157	425-514-1716		360-668-8863
Condon, Michael	T&IS Manager	425-304-1556	425-308-2901	425-514-2461		360-568-5591
Coniey, Robin	Master Responder	808-847-8144	808-864-5279	808-290-7852		808-487-8798
Connelly, Jason	Master Responder	253-572-9805	206-459-3824	206-986-3616		253-826-1578
Cook, Tommy	Response Supervisor	360-452-9388	206-375-3618	206-340-3228		360-452-0730
Cornell, Craig	Area Response Manager	360-588-8013	206-799-1621	206-559-8671		360-293-3990
Duff, Kevin	Master Responder	503-325-6330	503-298-0631	503-338-1074	503-909-1324*	360-642-8984
Ealon, Laura	Employee Services Administrator	425-304-1505	206-919-9182	425-514-1103		425-337-8859
Ediund, Ann	Administrative Assistant	425-304-1521	425-864-0350	425-514-1756		425-885-6413
Freudenstein, Kiele	Master Responder	253-572-9805	206-498-4155	206-986-0109		253-472-1940
Gardino, Louis	Senior Communicaiions Tech	425-304-1549	425-301-6275	425-514-2623		425-228-0480
Crasser, Phil	Technical Services Engineer	425-304-1525	425-308-1283	206-610-3932		206-522-6104
Gulliford, Herb	Response Supervisor	253-572-9805	206-375-3620	206-340-5187	253-222-1567	253-222-1567
Harshfield, Rick	Response Supervisor	503-325-6330	425-308-0156	503-338-1054	503-909-1761*	503-738-3201
Haugen, Jim	Response Supervisor	360-417-5437	425-308-0161	360-681-9630	800-902-2755*	360-452-7544
Helstad, Dan (DJ)	Master Responder	206-622-5590	206-459-4735	206-663-0738		206-406-7100
Henry, James (Dusty	Master Responder	360-417-5437	206-375-3622	206-986-3599		360-683-3834
Hoffman, Art	Lead Responder	360-452-9388	360-460-6345	360-582-8498	425-514-2128*	360-457-8830
Houck, Cam	Response Supervisor	206-622-5590	206-375-3619	206-986-3600		360-474-9904
Hughes, Christy	Lead Responder	360-293-8523	206-498-4231	206-559-8132	360-391-3292	360-766-4248
Jones, Jack	Master Responder	253-572-9805	253-720-2735	206-986-0105		253-846-7736
Kainz, Jeff	Training-Response Manager	425-304-1560	206-799-8066	206-986-0023		360-466-1640
Kevan, Barry	Area Response Manager	425-304-1526	425-308-0163	425-514-1855		425-397-7126
Klinnert, Dan	Master Responder	360-293-8523	206-375-3624	206-986-0017		360-653-3569
Larson, Stuart	Safety, Environ., Health & Security Adm	425-304-1547	425-308-9910	425-514-1938		360-568-2770
Leong, Derek	Master Responder	808-847-8144	808-864-5282	808-290-0175		808-485-1697
Linton, Lonnie	Lead Responder	503-325-6330	503-296-0632	503-338-1062	503-909-1237*	360-465-2941
Little, John	Master Responder	360-293-8523	206-375-3635	206-986-3593	360-391-9180	360-391-9180
Lorengo, Fred	Master Responder	503-325-6330	503-298-2633	503-338-1079	503-909-1815*	503-738-4208
Lozano, Ruel	Lead Responder	808-847-8144	808-864-5280	808-279-0942		808-230-0145
Malsom, Mark	(Metson Marine)	425-407-0751	360-775-1519	425-514-1799		360-675-9322
Marcus, Peter	Lead Responder	360-671-2371	206-459-4323	206-986-3601		360-733-3142
Mayo, Steve	Response Supervisor	360-671-2371	206-375-3621	206-986-3687		360-676-6821

NAME	TITLE	OFFICE	CELL	PAGER	PAGER 2	HOME
Paine, Robert (Eddy)	Master Responder	808-847-8144	808-864-5281	808-279-7853		808-531-8220
Peterson, Kevin	Master Responder	360-452-9388	206-375-3632	206-986-4207		360-452-0804
Quirk, Denny	Region Response Manager	360-293-8982	206-799-1622	206-986-3609		360-299-8274
Ryan, Larry	Lead Responder	206-622-5590	206-459-2653	206-680-1715		206-937-2289
Schacht, Ken	Master Responder	425-304-1548	425-293-1218	425-514-2094		425-335-3913
Seltenright, John	Response Supervisor	808-847-8144	808-864-4444	808-279-7833		808-236-7779
Sinskie, Shawn	Lead Responder	360-452-9388	206-459-7860	206-559-3566	360-477-0547	360-477-0547
Smiley, Dan	Response Supervisor	360-293-8523	206-375-3625	206-986-0224		360-333-1391
Smith, Paul	Communications Tech	425-304-1551	425-308-2329	425-514-2115		360-653-8829
Streefer, Marin	Engineering, Logistics & Maintenance Admi	425-304-1561	206-799-1620	206-986-3608		360-654-1932
Thill, Mike	Master Responder	360-452-9388	206-375-3634	206-986-3588	360-477-0559	360-301-0811
Tran, Tony	Master Responder	425-304-1528	425-308-0155	425-514-1160		425-673-7189
Twiford, Hy	Master Responder	360-671-2371	206-375-3633	206-986-0213		360-671-6769
Uyehara, Maya	Lead Responder	808-847-8144	808-864-5286	808-290-7848		808-623-6988
Vollenweider, Mike	Master Responder	360-452-9388	206-375-3617	206-986-0626		360-683-9687
Waage, Mike	Lead Responder	360-293-8523	206-459-4166	206-986-3595		360-679-4277
Wesson, Bob	Master Responder	360-671-2371	206-375-3623	206-986-0217		360-650-1623
Wilken, Tod	Lead Responder	253-572-9805	206-459-9791	206-540-7919		253-756-7441
Wright, Richard	Regional Vice President	425-304-1569	206-940-3285	206-997-2322		206-933-8458
Young, David	Lead Responder	360-417-5437	206-459-9356	206-559-0263		360-928-3699

* Seattle-PDX Area Pager--Astoria only

** Seattle or out of Port Angeles area pager

*** Neah Bay (west of Port Angeles) pager

APPENDIX C

MATERIAL SAFETY DATA SHEETS

For:

1. Bunker Fuel oil
2. Shell Industrial Fuel Oil
3. Shell Marine Fuel Oil
4. IF380
5. IF180
6. PS300
7. Marine Cutter Oil
8. Marine Diesel Oil
9. Marine Gas Oil
10. Diesel No. 2. Oil
11. Exxon Caloria Ht 43
12. Carbon Pitch Liquid

Copies of MSDS are found in Boiler Room and Portland Facility.

Copies of the Lower Columbia River Geographic Response Plan (GRP) are kept at the facility.

They are also available online at:
http://www.ecy.wa.gov/programs/spills/preparedness/GRP/Lower%20Columbia%20River/LCR%20GRP%2011-03.pdf

Portland MAP

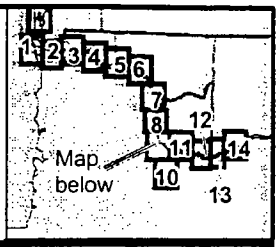
Proposed Booming Strategies

August, 2003

Lower Columbia River GRP

MAP # 9

0 0.5 1 2 Miles



St Helens - Lower Columbia River GRP - Map # 8

Area not included in GRPs

Government Island - Lower Columbia River GRP - Map # 11

Willamette River - Lower Columbia River GRP - Map # 10

LCR-97.5
Caterpillar Island
LCR-98.6
Sauvie Island
Frenchmans Bar Park
Vancouver Lake
Multnomah Channel
LCR-100.8
Vancouver Lake Flushing Channel
Belle Vue Point
Kelley Point
City of Vancouver
WR-0.9
MC-3b
MC-3a
MC-2
MC-1
Columbia Slough
Port of Vancouver
Hayden Island
Bybee Lake
North Portland Harbor
WR-3.7
WR-4.3
Smith Lake
WR-4.4
Tomahawk Island
WR-4.5
Cathedral Park
WR-5.8
St John Bridge
WR-6.9a
Doane Point
Brulington Northern RR Bridge
Port of Portland
WR-6.9b
WR-7.5
Swan Island Basin
Swan Island
Willamette River
Freemont Bridge
Broadway Bridge
Portland

Legend

- Public Lands
- Tribal Lands
- Military Installations

St Helens MAP

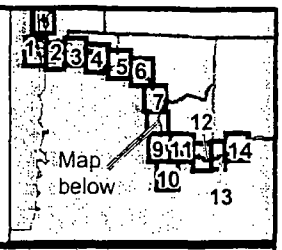
Proposed Booming Strategies

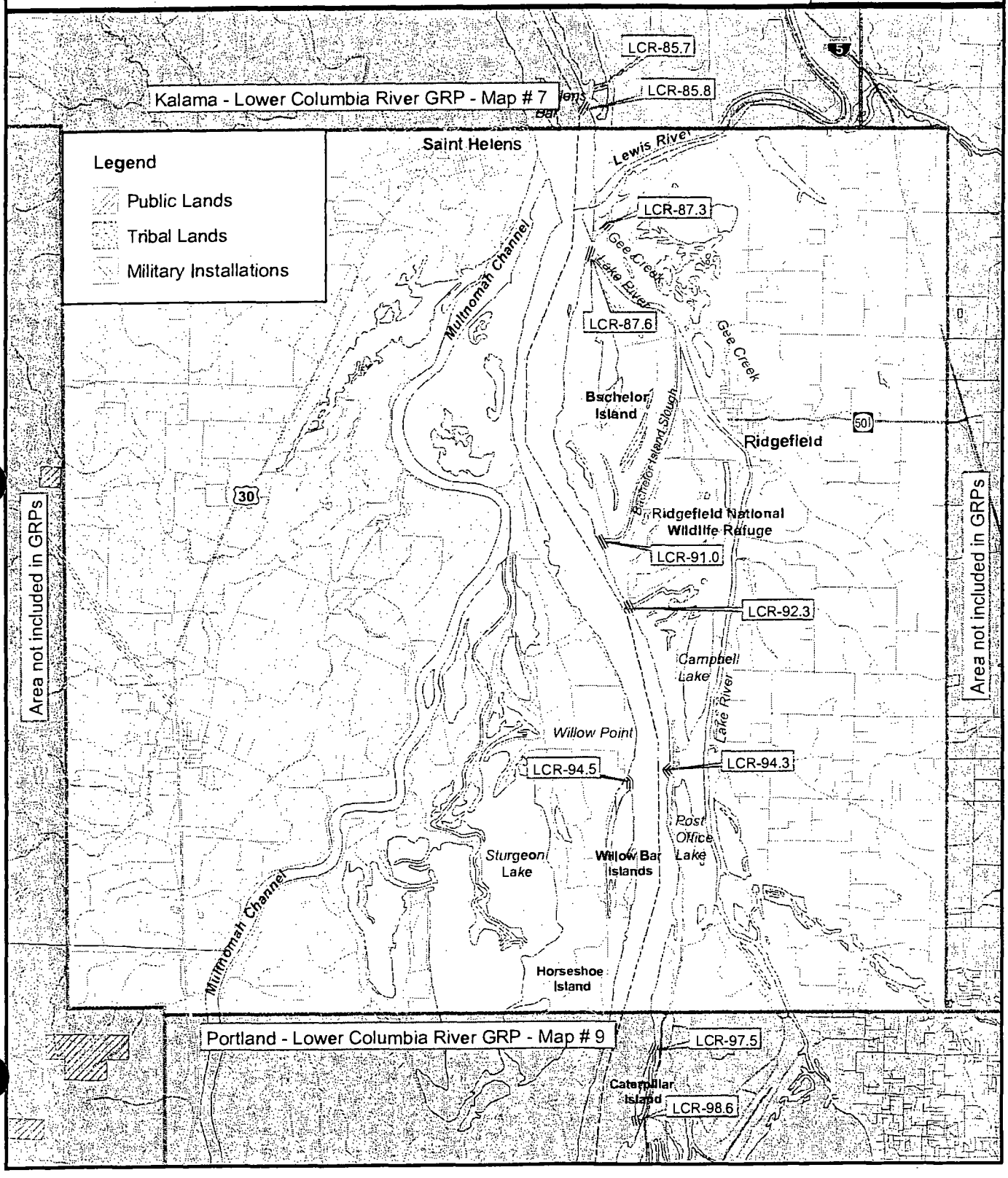
August, 2003

Lower Columbia River GRP

MAP # 8

0 0.5 1 2 Miles





Kalama MAP

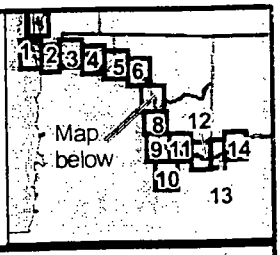
Proposed Boomung Strategies

August, 2003

Lower Columbia River GRP

MAP # 7

0 0.5 1 2 Miles



Longview - Lower Columbia River GRP - Map # 6

Kelama River

LCR-73.7

Goble

Goble Creek

Sandy Island

Kalama

LCR-76.0

Tide Creek

Deer Island

Mill Creek

LCR-79.5

LCR-79.8

Martin Slough

Martin Island

30

Goat Island

Deer Island Slough

Burke Island

Burke Slough

LCR-81.0

LCR-81.2

LCR-81.8

LCR-82.4

Gobin Slough

Woodland

LCR-85.7

LCR-85.8

Saint Helens Bay

Saint Helens

Lewis River

St Helens - Lower Columbia River GRP - Map # 8

Area not included in GRPs

Area not included in GRPs

Legend

- Public Lands
- Tribal Lands
- Military Installations

4.3.2.3 Willamette River Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Flow Level	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
WR-0.9	Field test 6/97	Columbia Slough (Smith & Bybee Lakes) 45°-38.608'N 122°-46.043'W	Deflection/ Collection - Deflect oil into collection area in slough; keep oil out of inner slough and lakes.	Any flow	1000'	Use 400' section to deflect oil into the entrance to Columbia Slough - place boom on N or S side of entrance depending on spill location and tide. Double boom the inside of entrance with 300' sections to prevent oil from moving into the inner slough and lakes.	Portland.	Via boat.	Critical wetland area.
WR-3.7	No field visit/ test	Willamette River 45°-36.720'N 122°-46.938'W	Collection - Prevent oil from moving into the Columbia River.	Any flow	500'	Angle boom from east shore to deflect/ collect oil moving toward the Columbia River. Will need to anchor ends in river or tend with a workboat.	Cathedral Park.	Boat ramp at Cathedral Park.	Lower Columbia River resources.
WR-4.3	No field visit/ test	Willamette River 45°-36.283'N 122°-46.695'W	Collection - Prevent oil from moving into the Columbia River.	Any flow	500'	Angle boom from east shore to deflect/ collect oil moving toward the Columbia River. Will need to anchor ends in river or tend with a workboat.	Cathedral Park.	Boat ramp at Cathedral Park.	Lower Columbia River resources.
WR-4.4	No field visit/ test	Willamette River 45°-36.227'N 122°-46.651'W	Collection - Prevent oil from moving into the Columbia River.	Any flow	500'	Angle boom from east shore to deflect/ collect oil moving toward the Columbia River. Will need to anchor ends in river or tend with a workboat.	Cathedral Park.	Boat ramp at Cathedral Park.	Lower Columbia River resources.
WR-4.5	No field visit/ test	Willamette River 45°-36.098'N 122°-46.562'W	Collection - Prevent oil from moving into the Columbia River.	Any flow	500'	Angle boom from east shore to deflect/ collect oil moving toward the Columbia River. Will need to anchor ends in river or tend with a workboat.	Cathedral Park.	Boat ramp at Cathedral Park.	Lower Columbia River resources.
WR-5.8	No field visit/ test	Willamette River - St. John's Bridge 45°-35.220'N 122°-45.725'W	Collection - Prevent oil from moving into the Columbia River.	Any flow	300'	Deploy boom from Cathedral Park to the St. John's Bridge to contain/ collect oil at the park.	Cathedral Park.	Boat ramp at Cathedral Park.	Lower Columbia River resources.

4.3.2.2 Multnomah Channel Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Flow Level	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
MC-1	Field test 11/97	Multnomah Channel - southern entrance, south shore 45°-37.120'N 122°-47.850'W	Deflection/ Collection - Prevent oil from moving up the channel.	Any flow	2,800'	Deploy 400' at south side of Multnomah Channel mouth, extending NE to pilings; deploy another parallel 400' slightly downstream. Deploy 2,000' toward NE, running from same pilings on south shore to dolphin on north shore to deflect oil toward MC-2. Note - during lower flow, can instead create collection chevron by angling 2,000' from mid-channel back to dolphin at north end of mouth.	Portland.		Waterfowl, eagle winter feeding area, shorebirds, cranes, Sturgeon Lake, sensitive marshes.
MC-2	Field test 11/97	Multnomah Channel - southern entrance, north shore 45°-37.340'N 122°-48.300'W	Collection - Prevent oil from moving up the channel.	Low flow	900'	Run 700' section from north shore to boom anchor buoy to collect oil deflected by MC-1; extend additional 200' into channel from buoy. Angle second 400' section parallel and slightly downstream for back-up.	Portland.	Via Fred's Marina off Highway 30. Access to Sauvie Island from Highway 30 to S. Island Rd.	Waterfowl, eagle wintering area, shorebirds, cranes, Sturgeon Lake, sensitive marshes.
MC-3a	Field test 2/97	Multnomah Channel - Sauvie Island bridge, west side 45°-37.705'N 122°-49.025'W	Collection - Prevent oil from moving up the channel.	Any flow	400'	Angle boom from the mainland to the bridge. Collect oil with portable skimmers.	Portland.	Via Fred's Marina off Highway 30. Access to Sauvie Island from Highway 30 to S. Island Rd.	Waterfowl, eagle winter feeding area, shorebirds, cranes, Sturgeon Lake, sensitive marshes.
MC-3b	Field test 2/97	Multnomah Channel - Sauvie Island bridge, east side 45°-37.765'N 122°-48.925'W	Collection - Prevent oil from moving up the channel.	Any flow	600'	Angle boom from Sauvie Island to the bridge. Collect oil with portable skimmers.	Portland.	Via Fred's Marina off Highway 30. Access to Sauvie Island from Highway 30 to S. Island Rd.	Waterfowl, eagle winter feeding area, shorebirds, cranes, Sturgeon Lake, sensitive marshes.

4.3.2.1 Lower Columbia River Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Flow Level	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
LCR-98.6	Field test 11/97	Caterpillar Island - south end (WA) 45°-41.660'N 122°-45.815'W	Exclusion - Keep oil out of slough behind island.	High flow	500'	Deploy boom from the south tip of Caterpillar Island to the mainland shore.	Stage from the boat ramp at Caterpillar Island.	Boat access only from ramps at Caperpillar Island, Vancouver, or Portland.	Wetland habitat.
LCR-100.8	Field test 10/01	Vancouver Lake/ Flushing Channel (WA) 45°-39.947'N 122°-45.528'W	Deflection/ Collection - Deflect oil into Flushing Channel for collection.	Low flow	800'	Angle a 400' section SW into the river to deflect oil into a collection site in channel. Double boom channel with two 200' sections to protect Vancouver Lake. If necessary, valves can be closed at River Road to prevent oil from entering Vancouver Lake. This strategy is most effective with a south wind at slack water or when oil is moving along the north (east) shore. Sand bars at the mouth of the channel are dynamic and may require modification of the strategy.	Stage from Vancouver, Portland, or the parking area at the west end of the flushing channel.	Vehicle access from Lower River Road. Boat access from Vancouver or Portland.	Vancouver Lake; down river resources.
LCR-108.4	Field visit 9/94	Marine Park Boat Ramp - upriver from Ryan Point (WA) 45°-36.747'N 122°-38.022'W	Collection - Collect oil in small cove.	Low flow	500'	Angle boom off boat ramp into river; divert oil to collection site.	Stage from Vancouver, Portland, or the boat ramp parking area.	Marine Park Boat Ramp access via Marine Parkway; good command post area.	Down river resources.
LCR-109.6	Field visit 9/94	Wintler Park (WA) 45°-36.667'N 122°-36.652'W	Collection - Divert oil to collection sites.	Low flow	500'	Angle boom upstream, off point just down river of Wintler Park (note - may not need full 500').	Stage from Vancouver, Portland, or the boat ramp parking area.	Boat access from the ramp near Lieser Point. Vehicle access off of Highway 14.	Resources down river (may be osprey nests in the area).

4.3.2.1 Lower Columbia River Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Flow Level	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
LCR-94.3	Field visit 6/03	Post Office Lake (WA) 45°-45.275'N 122°-45.303'W	Exclusion - Keep oil out of slough adjacent to lake.	High flow	200'	Deploy boom in a chevron configuration to enclose the entrance to the culvert that connects the river to the lake. The culvert entrance on the river side is a grated concrete structure about 20-30 feet from shore that is nearly flush with the river bottom. *The entrance on the lake side has stop-logs, contact the USFWS at 360-971-6000 (pager) to have someone install the stop-logs.*	Stage from the boat ramp at Caterpillar Island, the Ridgefield Marina or St. Helens.	Vehicle access from the Lower River Road. Boat access from the ramp at Caperpillar Island, the Ridgefield Marina or St Helens.	Ridgefield National Wildlife Refuge. Waterfowl, wetlands habitat.
LCR-94.5	No field visit/test	Willow Bar Islands (OR) 45°-45.140'N 122°-46.060'W	Exclusion or Collection - Keep oil out of slough behind Willow Bar Islands or use for collection.	Any flow	800'	Deploy boom in a chevron configuration by placing one section from the north tip of the primary Willow Bar Island to the small island to the north, and then continuing northwest to Sauvie Island. If no waterfowl are present in the slough, deploy 600' of boom to divert oil into the north end of the slough for collection; deploy 200' of boom across the slough to prevent oil from moving into the south end of the slough.	Stage from the boat ramp at Caterpillar Island, the Ridgefield Marina or St. Helens.	Vehicle access from Brown Road on Sauvie Island. Boat access from the ramp at Caperpillar Island, the Ridgefield Marina or St Helens.	Wetland habitat.
LCR-97.5	Field test 11/97	Caterpillar Island - north end (WA) 45°-42.565'N 122°-45.555'W	Exclusion - Keep oil out of slough behind island.	High flow	500'	Deploy boom from the north tip of Caterpillar Island to the mainland shore.	Stage from the boat ramp at Caterpillar Island.	Boat access only from ramps at Caperpillar Island, Vancouver, or Portland.	Wetland habitat.

4.3.2.1 Lower Columbia River Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Flow Level	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
LCR-87.3	New strategy 3/03	Gee Creek (WA) 45°-50.895'N 122°-46.560'W	Exclusion - Keep oil out of the creek and slough up-stream.	Any flow	100'	Deploy boom across the mouth of the creek. Will likely require a shallow-draft boat.	Stage from the Ridgefield Marina or St. Helens.	Boat access only. Use ramp at the Ridgefield Marina or St Helens.	Ridgefield National Wildlife Refuge. Wetlands habital.
LCR-87.6	Field test 4/97	Ridgefield NWR/ Bachelor Island Slough - north entrance (WA) 45°-50.540'N 122°-46.685'W	Exclusion - Keep oil out of slough	Any flow	600'	Deploy boom across the down-river (north) end of Bachelor Island Slough. Note - oil may collect here naturally. Minimize disturbance of shoreline and back-beach areas. Use established roads only for vehicle access.	Stage from the Ridgefield Marina or St. Helens.	Boat access only. Use ramp at the Ridgefield Marina or St Helens.	Ridgefield National Wildlife Refuge. Waterfowl, sand hill crane wintering, great blue heron spring nesting, bald eagle nests, wetlands habitat. Sensitive shoreline and back-beach.
LCR-91.0	Field test 4/97	Ridgefield NWR/ Bachelor Island Slough - south entrance (WA) 45°-47.625'N 122°-46.385'W	Exclusion - Keep oil out of slough	Any flow	600'	Deploy boom across the up-river (south) end of Bachelor Island Slough. Note - oil may collect here naturally. *Contact the USFWS to have 3 input pumps shut off - pager, 360-971-6000.*	Stage from the Ridgefield Marina or St. Helens.	Boat access only. Use ramp at the Ridgefield Marina or St Helens.	Ridgefield National Wildlife Refuge. Waterfowl, sand hill crane wintering, great blue heron spring nesting, bald eagle nests, wetlands habitat. Sensitive shoreline and back-beach.
LCR-92.3	Field test 4/97	Campbell Lake (WA) 45°-46.972'N 122°-46.083'W	Exclusion - Keep oil out of the lake.	High flow	300'	Deploy boom across the entrance to Campbell Lake.	Stage from the Ridgefield Marina or St. Helens.	Boat access only. Use ramp at the Ridgefield Marina or St Helens.	Ridgefield National Wildlife Refuge. Sandhill crane roost area, waterfowl, wetlands habitat.

4.3.2.1 Lower Columbia River Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Flow Level	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
LCR-79.8	New strategy 3/03	Goat Island - north end (OR) 45°-56.945'N 122°-49.168'W	Exclusion - Keep oil out of slough behind Goat Island.	Any flow	600'	Deploy boom across the north end of the slough behind Goat Island.	Stage from St. Helens or Kalama.	Boat access only. Use ramp at St Helens, or steep pay boat ramp at Kalama.	Waterfowl (winter); geese (summer).
LCR-81.0	No field visit/test	Martin Island - south end (WA) 45°-56.065'N 122°-47.850'W	Exclusion - Keep oil out of Martin Slough.	Any flow	600'	Deploy boom across the south end of Martin Slough.	Stage from St. Helens or Kalama.	Boat access only. Use ramp at St Helens, or steep pay boat ramp at Kalama.	Waterfowl (winter); geese (summer).
LCR-81.2	No field visit/test	Burke Island - south end (WA) 45°-55.863'N 122°-47.823'W	Exclusion - Keep oil out of Burke Slough.	Any flow	300'	Deploy boom across the south end of Burke Slough.	Stage from St. Helens or Kalama.	Boat access only. Use ramp at St Helens, or steep pay boat ramp at Kalama.	Waterfowl (winter); geese (summer).
LCR-81.8	New strategy 3/03	Goat Island - south end (OR) 45°-55.518'N 122°-48.865'W	Exclusion - Keep oil out of slough behind Goat Island.	Any flow	500'	Deploy boom across the south end of the slough behind Goat Island.	Stage from St. Helens or Kalama.	Boat access only. Use ramp at St Helens, or steep pay boat ramp at Kalama.	Waterfowl (winter); geese (summer).
LCR-82.4	No field visit/test	Deer Island Slough (OR) 45°-54.860'N 122°-48.965'W	Exclusion - Keep oil out of slough.	Any flow	300'	Deploy boom across the mouth of the slough on the south end. Ensure tide gates are closed at each end.	Stage from St. Helens or Kalama.	Boat access only. Use ramp at St Helens, or steep pay boat ramp at Kalama.	Creek; freshwater clams; wetland habitat.
LCR-85.7	No field visit/test	Goerig Slough - collection (WA) 45°-52.400'N 122°-46.725'W	Collection - Prevent oil from moving down stream.	Low flow	1000'	Deploy boom from the southeast corner of the islands off Goerig Slough to the mainland shore for collection with a skimmer or vac truck.	Stage from St. Helens.	Possible vehicle access from Dike Road. Boat access from ramp at St Helens.	Downstream resources.
LCR-85.8	No field visit/test	Goerig Slough - diversion (WA) 45°-52.200'N 122°-46.905'W	Diversion - Prevent oil from moving down stream.	Low flow	700'	Deploy boom at an angle from the southwest corner of the islands off Goerig Slough, up-stream into the main channel of the river to divert oil into the area behind the islands for collection.	Stage from St. Helens.	Boat access only. Use ramp at St Helens.	Downstream resources.

4.3.2.1 Lower Columbia River Proposed Booming and Collection Strategies: Matrices

Strategy	Status	Location	Response Strategy	Flow Level	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
LCR-71.5	New strategy 3/03	Carrol's Channel south end (WA) 46°-03.365'N 122°-52.333'W	Collection/ Exclusion - Natural collection area, prevent oil from moving up the channel.	Any flow	1200'	Deploy boom across the south end of Carrol's Channel to direct collected oil to the east shore, and to prevent oil from moving through Carrol's Channel. Current may be too strong to deploy boom across channel. If so, deploy as much boom as possible to divert oil to the east shore for collection.	Stage from the Willow Grove County Park or Kalama.	Vehicle access from east shore. Boat access from ramp at Willow Grove Park, or steep pay boat ramp at Kalama.	Wetland habitat.
LCR-71.6	New strategy 3/03	Carrol's Channel south end (WA) 46°-03.345'N 122°-52.540'W	Collection - Enhance natural collection into south end of Carrol's Channel.	Low flow	500'	Deploy boom from the south end of Cottonwood Island to enhance natural collection.	Stage from the Willow Grove County Park or Kalama.	Boat access only. Use ramp at Willow Grove Park, or steep pay boat ramp at Kalama.	Wetland habitat.
LCR-73.7	No field visit/ test	Goble Creek (OR) 46°-01.250'N 122°-52.522'W	Exclusion - Keep oil out of the creek.	Any flow	100'	Deploy boom across creek mouth.	Stage from the Willow Grove County Park or Kalama.	Possible vehicle access from Highway 30. Boat access from ramp at Willow Grove Park, or steep pay boat ramp at Kalama.	Sahnonid concentrations and habitat (peak times arc Sep-Oct, Apr-May).
LCR-76.0	No field visit/ test	Tide Creek (OR) 45°-59.660'N 122°-51.920'W	Exclusion - Keep oil out of the slough and creek.	Any flow	1000'	Deploy boom across small slough at the creek mouth.	Stage from the Willow Grove County Park or Kalama.	Boat access only. Use ramp at Willow Grove Park, or steep pay boat ramp at Kalama.	Wetland habitat, salmonid concentrations and habitat (peak times arc Sep-Oct, Apr-May).
LCR-79.5	No field visit/test	Martin Island - north end (WA) 45°-57.375'N 122°-47.985'W	Exclusion - Keep oil out of Martin Slough.	Any flow	600'	Deploy boom across the north end of Martin Slough.	Stage from St. Helens or Kalama.	Boat access only. Use ramp at St Helens, or steep pay boat ramp at Kalama.	Waterfowl (winter); geese (summer).

APPENDIX E

This Oil Spill Risk Analysis was developed for the Portland Facility, formerly owned by Pacific Northern Oil. The facility has been transferred to Pacific Terminal Services, Inc.

The Spill Prevention Control and Countermeasures (SPCC) Plan, described in this appendix are applicable to the same facility.

Appendix E - Attachment 2

OIL SPILL RISK ANALYSIS

PACIFIC NORTHERN OIL
PORTLAND FUEL OIL FACILITY
7900 NW St. Helens Road, Portland, OR

Table of Contents:

a.) Introduction and Summary
b.) Purpose and Objectives of Analysis
c.) Facility Description
d.) Method of Analysis
e.) Hazard Identification
f.) Risk Estimation
g.) Discussion of Results
h.) Conclusions and Recommendations
i.) Attachments
- A Hazards (WDOE)
- B Review of Oil Spill History
- C Facility Related Oil Spills, Genwest
- D Hazard Identification Check List (WDOE)
- E Oil Spill Hazards at Portland Facility
- F Risk Estimation Summary
- G Risk Estimation Matrix

Professional Engineering Certification

I hereby certify that this oil spill risk analysis has been prepared for Pacific Northern Oil under my direct supervision pursuant to Oregon Administrative Rules 340-47-160.

Name: Terry J. Bergman, P.E.

Signed: Terry J. Bergman

Dated: December 30, 1992

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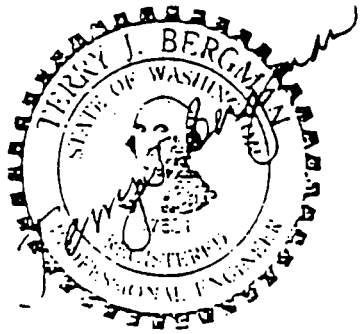

EXPIRES June 18, 1993

a.) Introduction and Summary:

This risk analysis is part of the Oil Spill Prevention Plan for the Pordand Fuel Oil Facility at 7900 NW St. Helens Road, Portland, OR.

This analysis and the facility Oil Spill Prevention Plan are prepared to comply with the Oregon Department of Environmental Quality regulations known as Oregon Administrative Rules (OAR) 340-47. Requirements for the spill risk analysis are specified in OAR 340-47-160 (3)(i)(A) through (E). These requirements call for evaluations of the oil spill risks of the transfer and storage systems and of the spill minimization and containment systems. The evaluations are to incorporate information about the spill prevention technology in use ar the facility. The spill risk analysis must be prepared under the supervision of a licensed professional engineer.

Experience and studies reviewed indicate that the risk of large oil spills from facilities is very low. However, risk is present in the handling and storage of fuel oil as it is in all human activity. Risk management is the use of policies, procedures and practices to identify, assess and control spill risks. The objective of oil spill risk management is the prevention of spills and the mitigation of environmental, health and property damages from spills. Oil spill risk analysis is the beginning of effective oil spill risk management.

This risk analysis was prepared with the help of facility operating personnel and facility management.

It is believed that the greatest risks of oil spills are:

i.) operator errors (including overfilling tanks or vessels and failure to detect leaks),
ii.) maintenance errors and
ii.) corrosion of buried pipelines and roofs and floors of storage tanks.

To address these risks it is recommended that:

i.) operator training be reviewed and focused on spill prevention,
ii.) maintenance practices be reviewed and updated and
iii.) underground pipelines and storage tanks be inspected for corrosion.

b.) Purpose and Objectives:

The purpose of this oil spill risk analysis is to ensure that oil spill hazards at the Portland facility are identified, assessed and managed. The results of this risk analysis may be used to reduce the risks of oil spills by eliminating spill hazards or limiting spill damages.

The Portland facility is an operating facility and therefore, this risk analysis is not undertaken to identify hazards and mitigate risks from the design, construction or modifications of the facility. The analysis is limited to the assessment of the current operation and maintenance of the facility including the facility spill history, the normal operating and maintenance procedures, emergency procedures and potential changes in the facility operating organization, procedures and practices and plant equipment to prevent spills and limit spill damages.

The specific objectives of this oil spill risk analysis are to:

i.) Identify hazards or potential causes of oil spills at the facility.
ii.) Estimate the severity (or freqency and volume) of spills from these hazards.
iii.) Prioritize potential hazards according to highest risk or severity of spills.
iv.) Identify feasible and effective spill prevention and/or mitigation alternatives.

c.) Facility Description:

The Portland facility is owned by Northwest Natural Gas Company and is operated by Pacific Northern Oil. The facility is located on the west shore of the Willamette River upstream of the St. Johns bridge. In different areas of the same property, Northwest Natural Gas operates a liquified natural gas storage facility and Koppers Company handles and stores phenols. Wacker Chemical operates a silicon wafer manufacturing plant on the adjacent property upstream (south). At the US Corp of Engineers' US Government Moorings facility on the adjacent property downstream, dredge vessels are maintained and refitted.

This oil spill risk analysis addresses and is limited to the equipment and areas operated by Pacific Northern Oil at the Portland facility. These areas include the dock service platform, the transfer pipelines including the fuel oil blending meters at the shore end of the dock walkway, the above ground storage tanks with their surrounding secondary containments, the railroad car unloading area and the truck loading and unloading area. These areas are identified in Figure 1.2 of the Facility Oil Spill Contingency Plan of which this risk analysis is part.

The nearby environment affected by any spills from the facility may include the lower 6 miles of the Willamette river, the Multnomah Channel on the east side of Sauvie's Island, the Columbia Slough near the mouth of the Willamette river and the lower Columbia river (below the confluence of the Willamette and Columbia rivers). Conditions of groundwater at the facility are not addressed in this analysis.

d.) Method of Analysis:

The operations of the Pordand fuel oil facility arc characterized as manually controiled. batch processes. Because of the relatively simple, uncomplicated operations of the Portland fuel oil facility, quantitativc hazard identification methods such as Hazard and Operability Studies (HAZOP), Fault Tree Analysis (FTA) or Failrue Mode and Effects Analysis (FMEA) are not considered appropriate to satisfactorily identify and evaluate spiil risks. These more quantitative methods arc useful in identifying unknown hazards from interrelated systems such as automatic or continuous flow systems.

The evaluation of oil spill risks in this analysis was done using qualitative, comparative and subjective roethods of hazard identification and risk estimation inciuding the study of the causes of spill from this and similar facilities and the use of check-lists.

Spccificaily, the foilowing approach was used:

i.) Review pertinent facility design drawings including site maps and piping diagrams.
ii.) Review facility operating and maintenance procedures.
iii.) Review facility operations manual.
iv.) Review the facility Spill Prevention and Control Comtermeasures (SPCC) Plan.
v.) Review previous oil spills at the facility.
vi.) Review oil spills at other marine fuel oil facilities.
vii.) Complete Washington DOE's Hazard Identification Checklist.
viii.) Evaluate transfer. storage and spill minimization and containment systems.
ix.) Document the risk analysis.

e.) Hazard Identification:

Oil spill hazards are conditions with the potential for causing oil spills. Potential oil spill hazards at the Portland facility may be numerous and varied and include:

i.) natural hazards such as floods or earthquakes.
ii.) social/lifestyle hazards such as sabotage, vandalism or drug and alcohol abuse.
iii.) technological hazards such as facility operations or equipment.

These and other potential oil spill hazards for facilities are listed in Attachment A which is from Washington DOE's Guidelines for Prevention and Review of Facility Oil Spill Prevention Plans.

The primary focus of this risk analysis is the identification and assessment of technological hazards. However, it is recognized that natural disasters or social hazards can precipitate, influence, or heighten the risks of technological failures that could lead to spills.

To identify known oil spill hazards, the history of oil spills (both on land and on water) at the Portland facility (refer to Attachment B) and other facilities (refer to Attachment C) were reviewed.

The review of the oil spill history at the Portland facility (Attachment B) identified records of at least 6 spills since 1980. Four of these spills were attributed to "operator error", one spill to "construction work" and one spill to "equipment failure".

The reference for hazards at other facilities is a 1992 study by Genwest Systems for the Western States Petroleum Association (Attachment C) which reviewed spills at oil facilities between 1985 and 1992 throughout the United States, and between 1980 and 1992 in Washington state. For the most recent data, the report ranked spill causes as follows:

Unspecified:	21%	Equipment failure:	10%
Other:	12%	Personnel error:	7%
Corrosion:	12%	Pipeline rupture:	5%
External force:	12%	Structural failure:	5%
Overfill/overflow:	11%	Valve failure:	5%

Despite the large percentage of "unspecified" causes, if most "overfill/overflows" may also be attributed to "personnel error", then "personnel error" is the predominant hazard for oil spillage at oil facilities.

Attachment E, Oil Spill Hazards for Portland Facility, summarizes the most significant oil spill hazards relative to transfer pipelines, transfer operations, oil storage tanks and secondary containment. These hazards are evaluated in the discussion section of this risk analysis.

f.) Risk Estimation:

Risk is a measure of the probability and severity or consequences of an oil spill onto state waters including the frequency of spills and volume of oil spilled. Probability is a measure of how likely it is that a spill incident will occur.

The consequences of oil spills can include:

i.) public health and safety damages including injuries to employees.
ii.) economic damages including property damages and fuel oil product losses.
iii.) environmental damages including injuries to plants and animals and loss of habitats.

The fuel oils handled and stored at the Pordand facility have low volatility (i.e., low air poilution risk) and low toxicity to humans (i.e., low pubilc healdr risk). Therefore, the greatest hkelihood of damages from spills at the Portland facility wiil be economic and environmental affecting the marine environments of. and public and private property along, the lower Willamette and Columbia rivers.

To estimate the risk of spills, a work group of facility management and operating personnel was interviewed using the Washington DOE's Hazard Identification Checklist (Attachment D). The results of this work relating to some specific risk areas is summarized in Attachment F, Risk Estimation Summary. The work group also reviewed the Washington DOE's list of hazards, Attachment A and discussed the relative risks of selected hazards relevant to the Poriland facility operations. The Risk Estimation Matrix, Attachment G, summarizes duis work.

g.) Discussion of Results:

From the identification of spill hazards (Attachment E) and the estimation of spill risks (Attachments F and G) the transfer pipelines, the transfer operations, the storage tanks, spill minimization efforts and secondary containment at the facility are reviewed.

i.) Transfer Pipelines:

At the Portland facility, transfer pipelines are those pipelines including pipes, valves, fittings and pumping equipment that are used to carry oil to or from the oil storage tanks and the dock, the truck loading or unloading areas, the rail car unloading area or the Southern Pacific Pipeline (SPPL) tie-in location.

The transfer pipelines going to the dock include the following:

12 inch flanged steel residual oil pipe which is insulated and steam traced.
10 inch diesel oil pipe which is bare steel.
8 inch flanged steel residual oil pipe which is insulated and steam traced.
10 inch flanged steel residual oil pipe to T-4 which is also insulated and traced.

The three transfer pipelines leading to the truck loading and unloading area are 6 inch steel pipes. Where these pipes are located underground, they are coated and wrapped for corrosion protection and those pipelines in residual oil service are insulated and steam traced. The transfer pipeline going to the rail car unloading area is a 6 inch steel pipe that is insulated and steam traced. The transfer pipeline connecting to the SPPL pipeline is a buried 8 inch steel pipeline that is coated and cathodically protected with sacrificial anodes.

The greatest risks of oil spills in transfer pipelines are maintenance errors, wear and tear and leak detection hazards. To reduce these risks, maintenance procedures for depressuring pipelines, contractor work practices, hydrotesting before start-up and continual routine inspection and repair of seals and packing should be reviewed and changed, if necessary. For leak detection, operator training and facility management may focus on increasing visual monitoring during oil operations. Currently, lines outside of containment including the dock pipelines are relatively short and can be kept in view during transfer operations.

For buried pipelines where structural failure or external corrosion pose relatively lower hazards, these pipelines may be excavated to inspect and evaluate corrosion rates and proper burial depth.

The greatest risk of oil spills caused by third parties may be from a runaway vessel that would hit the dock or dock walkway rupturing the dock pipelines. There is little that can be done at the facility to prevent such an occurrence.

From experience at the facility, it is known that surge is only a minor hazard because all valves are gate valves and are operated manually. The risk of damaging surge can be kept low through operator training that addresses the danger of overpressure from rapid valve closure.

ii.) Transfer Operations:

Transfer operations include the movement oil between the storage tanks and the dock, truck or rail car operation areas. Pacific Northern Oil transfers more than 3,5000,000 barrels in and out of the facility each year by water. This occurs in almost 500 separate transfer operations.

The greatest risk of oil spills from transfer operations is from overfilling vessels, which is largely attributed to operator error. To mitigate this risk, great emphasis is placed on operator training and communications (including the pre-transfer conference) between the dock operator and the barge's tankerman or ship's chief engineer. US Coast Guard regulations require that dock operators and vessel tankermen be trained in transfer operations, "persons-in-charge" be designated for the facility and the vessel, and a "declaration of inspection" check-list be completed verifying that the pre-transfer conference has occurred, the transfer operation and shutdown procedures are understood, communications exist, connections are made and there is agreement to begin the transfer.

Another frequent cause of leaks is improper hose handling including hose connections. To address this risk greater emphasis on proper hose handling in operator training will be undertaken.

Hoses are inspected before each use for cuts and abrasions deep enough to damage the strength layers of the hose. In addition, hoses are hydrostatically tested annually to 225 psig, as required by USCG regulations. These measures, along with proper hose handling procedures and training, are adequate to reduce spill risks from hoses ruptures.

With the dock operator always present at the dock risers, the tankerman always present on the barge and the shift supervisor manning the facility pumps and valves, staffing is adequate to safely carry out transfer operations. However, loss of communications or high wind or electrical storms are reasons to stop transfer operations until communications are restored or stormy weather subsides.

iii.) Storage Tanks:

Oil is stored in five large aboveground, fixed roof, fuel oil storage tanks. The total capacity of all of the tanks is 275,000 barrels. The tanks are almost never full. In 1992, for example, the tanks never held more than 71% of their combined capacities. Only once in 1992, did T-4 hold 95% of it's 80,000 barrel capacity while T-5 never exceeded one third of it's 55,000 barrel capacity. Also, T-4 the largest of the tanks was less than half full more than half of the time in 1992; T-2 was more than half full on only 14 days of the year.

All of these tanks are surrounded by secondary containment to reduce the risks of spills reaching the water or the soil outside of the containment. The tanks in the north tank yard were built in 1980 and are of welded steel construction and were designed to the API 650 standard in effect. These tanks have insulated walls and have internal steam coils for heating. The tanks in the south tank yard are of unknown age and are of riveted steel contstruction. They have insulated walls and pump suction heaters for tank heating by recirculation.

There are also two smaller tanks at the facility. One is a 500 gallon day-tank that stores diesel fuel for the boiler. It is only used when natural gas supplies are curtailed (usually in the winter). The other is a 20,000 gallon residual blending tank located near the truck rack which is used to blend specialty fuel oils for truck deliveries.

Because of secondary containment, the risks of oil spills getting into the water or soil outside of the containment areas is relatively low. However, to reduce these risks all tanks should be fitted with high level alarms. This would require adding such alarms to the diesel tank (T-2), the 500 gallon boiler day-tank and the 20,000 gallon truck blending tank. For checking the extent of corrosion, the large storage tanks should be inspected in accordance with API 653 and repaired as required. Inspections such as these are expensive because they require thorough cleaning of the tanks but it is very difficult to evaluate corrosion rates without such work. Currently, to check for leaks, the tanks are monitored at least once per shift (twice per day) and the inventory is checked daily to look for unexplained losses such as may occur if a tank were to begin leaking.

iv.) Spill Minimization:

At the Portland facility, spill minimization is accomplished by the use of emergency switches for the rapid shutdown of transfer pumps, isolation valves on the dock pipelines at the shore end of the dock walkway to limit drainout and the use of containment boom to confine spilled oil.

v.) Secondary Containment:

Secondary containment is designed to prevent oil that is spilled or leaked, from reaching the waters of the state or the soil outside of the containment before clean-up can occur.

At the Portland facility, all aboveground fuel oil storage tanks are located within, or are so situated that spills would drain into, secondary containment areas. These containment areas are designed to drain to concrete sumps from which the spilled oil can be collected. The capacity of the two secondary containment areas for the storage tanks exceed the standards of NFPA 30 which require the secondary containment to hold 110% of the contents of the largest storage tank.

There are no drain valves to be left open in either the north or the south tank yards. Storm water run-off is collected in the sumps and pumped through an oil/water separator to three settling ponds before discharge to the river (in accordance with NPDES permit requirements).

The north tank yard is lined with bentonite clay to reduce seepage from spills. It is not known if the south tank yard is lined in any way. Despite this, the heavy oils stored and handled at the facility are naturally thick and viscous and would penetrate soil relatively slowly. Even so, rapid action to clean-up spills is required to limit seepage.

Indications of erosion and cracking of the tank yard walls is done on each shift and more formally, during the monthly SPCC facility inspection. Erosion and cracks are easily observed and can be readily repaired and pose only a low risk.

vi.) Maximum Most Probable Spill:

The maximum most probable spill from the Portland facility is estimated to be the simultaneous failure of all three dock pipelines during a transfer operation. Such a failure might occur as a result of a runaway vessel striking the dock or dock walkway. It is estimated that if oil is being pumped at 5000 barrels per hour, and it takes as long as 15 minutes to discover the failures, and 5 minutes to shutdown the pumps and close all isolation valves, the amount of oil lost would be about 1800 barrels, including the complete loss of line-fill in all three dock pipelines.

h.) Conclusions and Recommendations:

According to the Genwest report (attachment C), USCG records indicate approximately 600 water spills are reported in Washington every year but only about 1% of these are greater than 50 gallons or about 1 barrel. Between 1980 and 1992, only 24 spills greater than 1000 gallons or 24 barrels occurred in Washington. Washington has about 3 times as many oil facilities as does Oregon.

Genwest also found that the reporting of spills and their causes has not been reliable, accurate or specific enough to allow generalizations about the use of, need for, or success of spill prevention or detection equipment. This means that it is very difficult to generalize about the best preventive measures to take to reduce spill risks.

For the Portland facility it is recommended that the following preventive measures be taken:

Transfer Pipelines: Biggest risks: Maintenance errors and corrosion.
- Review maintenance procedures.
- Intensify operator training for valve and pump packing maintenance.
- Excavate buried pipelines to check extent of corrosion.
- Inspect and test cathodic protection systems.

Transfer Operations: Biggest risks: Overfilling tank or vessel.
- Intensify operator training especially for simultaneous operations.
- Review operating procedures

Storage Tanks: Biggest risk: Corrosion of roofs or floors.
- Conduct API 653 inspections of tanks.
- Install high level alarms in 3 tanks.

Spill Minimization: Biggest risk: Failure to see leak.
- Intensify operator training for leak detection and rapid shutdown.

Secondary Containment:
- Inspect for erosion and cracks.
- Seasonally control weeds and grasses.

Several risks are low or preventive measures effective enough at reducing spill risks. For example, because isolation gate valves are operated manually, overpressure from surge is not considered a significant spill hazard. Similarly, staffing levels appear adequate for the operations conducted. Secondary containment areas have no drain valves to be left open.

Other minor risks such as the chance that a runaway vessel could damage the dock cannot be effectively addressed by the facility in an effective way to eliminate the risk.

This analysis is qualitative in nature, and it's accuracy is limited to the subjective judgements made about the oil spill hazards that exist at the facility, the severity of the risk posed by those hazards. While the future cannot be foreseen, spill prevention efforts in the areas outlined in this analysis will lead toward the goal of establishing best achievable protection for the environment.

Review of Oil Spill History
Portland Fuel Oil Facility

PNO has no information about oil spills at the Portland facility prior to the beginning of operations in August, 1979.

October 26, 1980:

Oil was found by facility personnel to be seeping from the river bank while the vessel "Pecos" was moored at dock discharging 75000 bbls into T-4 in south tank yard. Source of estimated 50 gallon spill of bunker oil was leak in underground pipeline connecting T-4 to dock pipelines. Cause of failure conjectured to be recent "construction work" including filling of dirt over this old pipeline. Corrective measure was to replace pipeline from dock tie-in to T-4. New pipe was installed above ground outside of containment area. Clean-up involved booming the river bank and tending adsorbent materials until seepage stopped.

November 12, 1980:

Small (3/4 inch) bleeder valve on main 12 inch dock pipeline was left open by operator after loading the barge "Lassen". Tank head pressure forced oil out spilling an estimated 3 gallons of bunker oil into river. Cause was "operator error". Spill was detected visually by facility personnel. It is not known what clean-up, if any, was attempted.

April 23, 1981:

After maintenance on "cross-over" valve at the dock, diesel was found by facility personnel to be leaking from the valve at the start-up of loading to the barge "Lassen". An estimated 42 gallons of diesel spilled into the river. The cause of the spill was the failure of outside contractor to complete the tightening of bolts after repairing the valve and failure of PNO maintenance personnel to double-check contractor's work before placing valve back into service, i.e., cause was "operator error". It is not known what clean-up, if any, was attempted.

February 1, 1991:

Railroad car found by facility personnel to be overflowing during heating operation prior to unloading. Estimated spill was 200 to 300 gallons spilled to the ground (mostly between the rail tracks). The cause was overloading of the rail car with "cold" product by the supplier, failure of the plant personnel to recognize this condition before heating and failure to check on progress of heating operation, i.e., the cause was "operator error". As corrective action, written rail car heating and unloading instructions were revised and check-lists developed. Free liquid oil was sucked up with vacuum trucks. Oil soaked dirt and gravel was dug up and hauled away to land fill.

April 16, 1991:

Pump packing was found by facility personnel to have leaked excessively during an intertank transfer. An estimated 10 to 20 gallons were spilled to the ground around the pump. Cause of packing failure was suspected to be poor suction conditions with low tank head and cold oil in suction piping at start-up of transfer operation. Cause was equipment failure but spill was made worse by operator inattention, i.e., "operator error". Oil soaked dirt was shoveled up into drums for disposal off-site to land fill.

July 24, 1990:

Bunker oil leaked from bottom connection of rail car upon removal of safety cap by facility operator prior to unloading operation. Cause was failed bottom discharge valve. The valve may have been damaged in transit or the safety cap may not have been removed as required during filling by the supplier. An estimated 500 gallons may have spilled onto the ground between the rail tracks. This spill was attributed to "equipment failure". Free liquid oil was sucked up with vacuum trucks . Oil soaked dirt and gravel was dug up and hauled away to land fill.

December 15, 1992:

During filling of the boiler fuel tank, T-6, operator in attention allowed about 300 gallons of diesel oil to overflow from the tank. The spill was visually detected by facility personnel. All of the oil was contained inside of secondary containment. The cause of the spill was "operator error". To prevent a recurrence, a high level shut-off switch was installed to prevent the tank from overflowing. Free liquid oil was sucked up with vacuum trucks and recycled. Oil soaked dirt was incinerated at Oregon Hydrocarbon.

January 25, 1993:

During unloading of a railroad tank car, No. 6 fuel oil was found by facility personnel to be leaking from the transfer piping. Between 400 and 800 gallons of oil were released into secondary containment before detection and the flow was stopped. The source of the leak was a broken pipe fitting on the transfer pump. The cause of the equipment failure was determined to be "vibration induced fatigue". To prevent a recurrence, the broken pipe fitting and all similar fittings in the facility were replaced with stronger (Schedule 80) pipe fittings. Clean-up involved recycling free liquid oil and incinerating oil soaked dirt.

ATTACHMENT A

HAZARDS

Flooding
Tornadoes
Rain Storms
Earthquake
Subsidence/Landslide
Lightning
Freezing and Ice
Explosives
Flammable Gases
Flammable Liquids
Fixed Combustibics
Transient Combustibles
Elccaicnl Failures
Mechanical Failures
Wear and Tear (Maintenance)
Non-Rotary Equipment Failnrcs
Rotary Eauioment Seal Failure
Protcctivc Dcvice Failure
Sunm overflow
Equipmcnt Vibration Indnced Failnre
Corrosion/Erosion
Metal Fatigue Failure
Pipc/Weid Failure
Pipe Seam Failure
Pipe Prcviously Damaged
Undcrgrcund Component Failnre
Operating Company/Conracarr Damage
Third Parry Damage
Soil Instability
Operator Error
Valve Not Cosed
Over-Pressure Piping
Overfilling
Fire Extinguisher System Failure
Computer Failure
Tcicecommunicarions Failure
Material Handling
Implosion Vacuum
PCB Soiil
Hazardous Materials Spill
Release of Gas
Liquid Hydrocarbon Spill
Tie-ins Failure
Release of Odorization
Motor Vcaicle Accidents
Rail Road Accidents
Warercraft Accidents
Aircraft Accidears
Sabotage
Vandalism
Theft/Fraud
Extorrion
Architect/Engineering Errors & Omissicns
Financial Transaction Errors & Omissicns
Management Errors and Omissions
Regularory Changes
Strucnnai Failnre/Coilapse
Pressure Too High/Low
Temncramre Too High/Low
Fire Protection Systems
Safety Valves
Safety Critical Instruments
Emergency Block Valves

Reference: Washington Department of Ecology, "Guidelines for Preparation and Review of Facility Oil Spill Prevention Plans", October, 1992.

ATTACHMENT D

STATE OF WASHINGTON DEPARTMENT OF ECOLOGY
OIL SPILL PREVENTION PLAN
FACILITY OIL SPILL RISK ANALYSIS
HAZARD IDENTIFICATION CHECK LIST

Facility: _____ Date: _____

Spill Potential Ratings
High (H) Medium (M) Low (L)

"No" answers with high to medium spill potential require further investigation. Formal risk analysis methods should be considered for situations with high to medium spill potential.

	Yes	No	Spill Potential	Comment	Response
A. MARINE LOADING/UNLOADING AREA					
Fire Related Spill Hazards					
1. Is the fire extinguishing system adequate?	✓			dry system on dock.	
2. Are sufficient fire extinguishers nearby?	✓				
3. Are block valves, check valves, pumps, filters, etc., made of steel?	✓				
4. Are pipe supports fire proofed?		✓	fire fill. (L)	dock watchman steward.	none. dock has sprinkler system.
5. Have flammable material ignition sources been eliminated?		✓	" (L)	Phone, heater, Radio, windsock shacks.	none. no flammables - ha[illegible].
6. Does all electrical equipment meet explosion proof requirements?		✓	" (L)	"	"

TJB
12-7-92.

Note: See reverse side for list of hazards to consider

STATE OF WASHINGTON DEPARTMENT OF ECOLOGY
OIL SPILL PREVENTION PLAN
FACILITY OIL SPILL RISK ANALYSIS
HAZARD IDENTIFICATION CHECK LIST

Facility: _____ Date: _____

Spill Potential Ratings
High (H) Medium (M) Low (L)

"No" answers with high to medium spill potential require further investigation. Ponunt risk analysis methods should be considered for situations with high to medium spill potential.

	Yes	No	Spill Potential	Comments	Response
Material Handling Related Spill Hazards					
7. Are remotely operated controls installed for emergency shutdown?	✓				
8. Are barricades and/or shields installed to protect equipment? TTLR/RR Spur/Trucks unloading/Docks/Piling ?			Line fill (M)	re: runaway vessels.	none.
9. Are unloading lines equipped with check values allowing one way flow?		✓	(L)	Flow goes in and out.	none reqd.
10. Are hoses in good repair and pressure tested on a regular basis?	✓			Hydrotest annually. 3 hoses.	
11. Is the over-pressure prevention system adequate?	✓ recirc on pumps)	✓ Thermal Relief	High Freq. Low Vol. (L)	Blower Packing and gaskets	none... all drip pans.
Containment & Control Related Spill Hazard					
12. Are there spill collection facilities?		✓	Low Freq. Med vol. (M)	RR Spur and Pender Docks	Build Containment @ Docks.
13. Is oil spill containment equipment on hand and adequate?	✓ Boom & Drip Pans.	✓ need Boat & motor.	(L/A)	Drip pans are OK.	move Boom to Docks } train. Buy Boat and Motor, }
14. Is there an oil spill response plan?		✓	(L/A)	Work in Progress	Due 1-1-93.
15. Are vessel overfill devices and/or procedures adequate?	✓		(L)	Per USCG regs.	Declemar to inspect Barge containment

Note: See reverse side for list of hazards to consider

STATE OF WASHINGTON DEPARTMENT OF ECOLOGY
OIL SPILL PREVENTION PLAN
FACILITY OIL SPILL RISK ANALYSIS
HAZARD IDENTIFICATION CHECK LIST

Facility: _____ Date: _____

Spill Potential Ratings
High (H) Medium (M) Low (L)

"No" answers with high to medium spill potential require further investigation. Formal risk analysis methods should be considered for situations with high to medium spill potential.

	Yes	No	Spill Potential	Comments	Response
II. DOCK TRANSFER PIPELINES					
Material Handling Related Spill Hazards					
1. Is the corrosion protection and inspection program adequate?	✓ SPPL OK.	✓	Low Freq. Low Vol. (L)	Temp 10" Tank Crms.	Replace PL in future / Inspect Tank bottoms.
2. Are external coatings used and in good condition?		✓	[redacted] "	none on 10"(?)	"
3. Is right-of-way clear and patrolled on a regular basis? Is it effective?	N/A.			Plant checked routinely + Security guards.	
4. Are pipelines protected from impact damage (Barricades/depth of cover)?		✓ (F)	Low Freq. (L) Line Fill (M)	Temp 10" Buried - limit Traffic. Runaway Vessel. none.	KK Spur also: TTLR
5. Are surge and fatigue loadings acceptable? (specially filtered lines)			Low Freq. to Contain (L)	Kappes 8"	Reinforced Supports. Truck could hit R: 10 BBL/min.
6. Is there an effective leak detection system?	✓			Visual is OK.	
7. Are pipelines susceptible to soil movement? (Land slide, washout, etc.)			Lo Freq. Med. (M) " Low Vol (L)	Temp 10" Supports Kappas 8" Supports Resp. behind boiler bldg	TD: 40 BBL/min *
8. Have lines been hydrostatically tested? What level and frequency?	✓			annually @ 225 psig.	

Note: See reverse side for list of hazards to consider

† (L) potential: Re: west tanks vehicle could drive off dike road and hit tank. Lo Freq. Level due to containment.

* 1. recognition = _ mins.
2. S/D. = _ min.
3. Prominent. = line fill.

T.D 12-7-88

STATE OF WASHINGTON DEPARTMENT OF ECOLOGY
OIL SPILL PREVENTION PLAN
FACILITY OIL SPILL RISK ANALYSIS
HAZARD IDENTIFICATION CHECK LIST

Facility: _____ Date: _____

Spill Potential Ratings
High (H) Medium (M) Low (L)

"No" answers with high to medium spill potential require further investigation. Formal risk analysis methods should be considered for situations with high to medium spill potential.

	Yes	No	Spill Potential	Comments	Response
C. BULK STORAGE TANK FARM					
Fire Related Spill Hazards					
1. Is fire protection adequate? Does system meet industry codes and A.P.I. standards?	✓			Combustibles only. Use code 911.	Fill needed ⊛
2. Is there adequate fire water?	✓				
3. Are tank valves made of steel?	new tanks ✓	(?) ✓✓ old tanks.	(L)		✓✓ old yard
4. Are pipe supports fire proofed?		✓	(L)	all steel	none.
5. Are firewalls (dykes) in place and sized to meet industry standards?	✓				
6. Do oil lines inside fire walls have welded joints?	✓ new yard	✓ old yard	seepage only. (L)	4" threaded in old yard	none.
Material Handling Related Spill Hazards					
7. Do tanks have high level alarms?	✓	✓ except T-2	(L)	never fill T-2.	none.
8. Is there an automatic shutdown system on high level?		✓		on T-1 overfill valve toppled out.	none
9. Are there ground level or remote fill level gauges?	T-1 only ✓	✓	(M) or (L)	May allow spills. Env. cost/Maint High.	Repair as needed on designed tank mi section.
10. Do pipelines penetrate dykes and fire walls?		✓	OK.		

✓✓ Firehoses on Docks for rot.

⊛ Add CO2 Fire Extings in tank farms near pumps. +/or Pump turnouts.

TJB 12-7-12.

Note: See reverse side for list of hazards to consider

STATE OF WASHINGTON DEPARTMENT OF ECOLOGY
OIL SPILL PREVENTION PLAN
FACILITY OIL SPILL RISK ANALYSIS
HAZARD IDENTIFICATION CHECK LIST

Facility: _____ Date: _____

Spill Potential Ratings
High (H) Medium (M) Low (L)

"No" answers with high to medium spill potential require further investigation. Formal risk analysis methods should be considered for situations with high to medium spill potential.

		Yes	No	Spill Potential	Comments	Response
	Containment/Control Related Spill Hazard					
	11. Is tank farm lot impervious to oil spill penetration?	✓ new yard	✓ old yard unknown	low freq. (M)	curber @ 25 YRS in T-6.	no action.
	12. Is there a spill collection system inside tank lot?	✓			drainage to sumps.	
	13. Are containment dykes sized to meet codes?	✓				
D.	PUMP STATION					
	Fire Related Spill Hazards					
	1. Are pumps, valves and other vessels fire rated?	✓			Pumps CI.	none
	2. Is fire protection system adequate?	✓				Add extinguishers near pumps.
	3. Are all ignition sources eliminated?		✓	(L)	combustibles only.	
	Material Handling Related Spill Hazards					
	4. Is over-pressure system adequate?	✓				
	5. Is there an emergency shut down system?	✓				
	6. Is there a spill collection system (Pump slab, dykes, collection drains, sump tank, etc.)?	✓			in containment.	

Note: See reverse side for list of hazards to consider

TJB
12-7-92.

STATE OF WASHINGTON DEPARTMENT OF ECOLOGY
OIL SPILL PREVENTION PLAN
FACILITY OIL SPILL RISK ANALYSIS
HAZARD IDENTIFICATION CHECK LIST

Facility: ______________________ Date: ______________

Spill Potential Ratings
High (H) Medium (M) Low (L)

"No" answers with high to medium spill potential require further investigation. Formal risk analysis methods should be considered for situations with high to medium spill potential.

	Yes RR	Yes TTLR	No RR	No TTLR	Spill Potential	Comments	Response
E. TRUCK/RAIL LOADING/UNLOADING							
Fire Related Spill Hazards							
1. Is fire protection system adequate?	✓	✓				Call 911.	
2. Is there adequate fire water? Does it meet codes and industry standards?	✓	✓					
3. Are block valves fire rated?		✓				✓✓ valves @ RR	
4. Does electrical equipment meet explosion-proof requirements?	✓	✓				XP enclosures not req'd.	
Material Handling Related Spill Hazards							
5. Is system manual or automatic?	man.	man.					OK.
6. Do trucks/rail cars have overfill protection?			N/A	✓			
7. Is there an emergency shutdown system?	✓ @ Rap.	✓	[illegible]	[illegible]	1-2x's/yr (up to 260 gals.)	we have emerg. drain plug in RR car tanks.	RR car tanks. no action
8. Are there pressure relief devices on system?	✓	✓					
9. Are block valves secure and safe from the public?	✓	✓				inside fenced.	
10. Are public access areas fenced and lighted?	✓	✓					

we could heat RR cars above Flash Point.

Note: See reverse side for list of hazards to consider

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STATE OF WASHINGTON DEPARTMENT OF ECOLOGY
OIL SPILL PREVENTION PLAN
FACILITY OIL SPILL RISK ANALYSIS
HAZARD IDENTIFICATION CHECK LIST

Facility: _____ Date: _____

Spill Potential Ratings
High (H) Medium (M) Low (L)

"No" answers with high to medium spill potential require further investigation. Formal risk analysis methods should be considered for situations with high to medium spill potential.

	Yes RK	Yes TTLR	No RK	No TTLR	Spill Potential	Comments	Response
Containment/Control Related							
H. Is there a spill collection system around loading/unloading areas?		✓	✓		(L)	collect Spills Between Trucks	none.
F. PROCEDURES							
1. Does facility have an up-to-date operating procedures manual?	✓						
2. Does facility have an oil spill response plan and procedures?			✓		(H/A)	Due 1-1-93	work in progress.
3. Is there a system to ensure compliance with applicable codes?	✓					Compliance Mgr assigned.	work in Progress.
4. Is there a quality management system in place to ensure compliance with above procedures and programs?			✓				Develop. Procedures/ Practices
5. Is there a program for monitoring/controlling third party activities?	✓					Security Guard and Fence.	

Add Barricades to Control truck and delivery traffic

Note: See reverse side for list of hazards to consider

TSD 12-7-92

STATE OF WASHINGTON DEPARTMENT OF ECOLOGY
OIL SPILL PREVENTION PLAN
FACILITY OIL SPILL RISK ANALYSIS
HAZARD IDENTIFICATION CHECK LIST

Facility: _____ Date: _____

Spill Potential Ratings
High (H) Medium (M) Low (L)

"No" answers with high to medium spill potential require further investigation. Formal risk analysis methods should be considered for situations with high to medium spill potential.

	Yes	No	Spill Potential	Comments	Response
G. GENERAL					
1. Is there a fitness for purpose testing program in place for critical oil movement lines (hydrostatic pressure testing, internal inspection, external inspection, coating inspection, etc.)?	✓			annual hydro daily plant check. monthly SPCC checks	
2. Have natural hazards been investigated and monitored (Land slides, slope instability, bed scouring on flowing water, soil subsidence, etc.)?	✓	✓ erosion		H.A.L did soil sampling.	look @ HAL reports
3. Are leak detection surveys conducted and records maintained for two years min? Is a material balance maintained for the facility?	✓ daily inventory.				
4. Are changes to equipment critical set points controlled adequately?	?				
5. Are pipeline crossings by third parties controlled? Are crossing agreements in use?	✓			on SPPL.	
6. Is there a training program for employees on safe operation and maintenance of all oil movement systems?	✓			on-the-job training.	

Note: See reverse side for list of hazards to consider

TJB 12-7-92

RISK ESTIMATION MATRIX

Frequency	Severity BBLS	Hazard or Cause	Source of Leak or Spill	Severity Criteria	Corrective Measures
Frequent	> 100	Mechanical Failure	Damaged pump casings, expansion joint.	Failure during transfer.	Inspect and maintain.
Frequent	> 100	Operator - Error	Tank overfill or valve left open.	Failure during transfer.	Operator training.
Frequent	> 1	Wear and Tear	Pump seal or gravel packing leaks.	Partial line fill.	Inspect and maintain.
Probable	> 10	Electrical Failures	Communication interruption.	Partial line fill.	None.
Probable	> 10	Contractor Damage	Failure to depressure pipes.	Partial line fill.	Review maint. procedures.
Probable	> 1	Freezing	Burst pipes or fittings.	Partial line fill.	Operator training.
Probable	> 1	Total Valve Failures	Over pressure.	Partial line fill.	Inspect and maintain.
Occasional	> 100	Engineering - Errors	Insufficient design or inspection.		
Occasional	> 10	Financial - Error	Insufficient investment or maintenance.		
Occasional	> 10	Management - Error	Insufficient training or supervision.		
Occasional	> 10	Corrosion	Deterioration of tank bottoms or buried pipes.	Partial tank or line fill.	Inspect and maintain.
Remote	> 1000	Earthquake	Damage tanks or dock.	Tank contents.	None.
Remote	> 1000	Flammable Liquids/Gases	Spread like/damage tanks.	Tank contents.	None.
Remote	> 1000	Structural Failures	Tanks leak.	Tank contents.	None.
Remote	> 1000	Soil Instability/Subsidence	Damage tanks.	Tank contents.	None.
Remote	> 100	Fire System Failure	Damage dock walkway.	Total line fill	Inspect and maintain.
Remote	> 100	Fixed Combustibles	Damage dock walkway.	Total line fill	None.
Remote	> 100	3rd Party - Motor Vehicle Accident	Damage tanks or truck loading rack.	Total line fill	Limit traffic inside facility.
Remote	> 100	3rd Party -Watercraft Accident	Damage dock.	Total line fill.	None.
Remote	> 100	Weld Failure	Break pipelines.	Total line fill.	None.
Remote	> 10	Flooding	Wash away dock or tanks.	Partial line fill.	None.
Remote	> 10	Ice	Damage dock.	Partial line fill.	None.
Remote	> 10	Metal Fatigue	Break pipe supports.	Partial line fill.	Inspect and maintain.
Remote	> 10	3rd Party - Rail Car Accident	Damage rail car or pipeline.	Rail car contents.	None.
Improbable	> 1000	Landslide	Damage tanks.	Tank contents.	None. Very low risk.
Improbable	> 1000	Lightning	Start fire.	Tank contents.	Check grounds on tanks.
Improbable	> 1000	Sabotage/Vandalism/Theft	Damage pipelines, valves or tanks.	Tank contents.	None. Security adequate.
Improbable	> 1000	Tornado	Damage tanks.	Tank contents.	None. Very low risk.
Improbable	> 1	Vandalism/Fraud	Intentional release.	Partial line fill.	None. Very low risk.

Notes:

1. Corrective Measures: None. Indicates that current preventive measures or practices are sufficient to reduce risk to tolerable level.
2. Corrective Measures: None. Very low risk. Indicates that the low frequency of (unlikely) event means additional preventive measures are unwarranted.
3. Frequency means estimated occurrence as follows:
   - Frequent: likely to occur repeatedly during life cycle.
   - Probable: likely to occur several times during life cycle.
   - Occasional: likely to occur sometime during life cycle.
   - Remote: Not likely to occur during life cycle.
   - Improbable: Probability near zero.
4. Severity means estimated worst case volume in barrels of oil spilled outside of containment or to water or the state or to soil before cleanup can occur.

ATTACHMENT 5

Attachment E
General Oil Spill Hazards for Portland Facility

1. Transfer Pipelines:

The oil spill hazards associated with transfer pipelines include:

Maintenance errors such as from improper depressurization before repair work.
Wear and tear such as from worn pump seals and valve packing.
Failure to detect leaks visually.
Structural failure of buried pipes from truck traffic (e.g., the 10 inch pipe to T-4).
External corrosion in buried pipelines (e.g., the 10 inch to T-4 or the SPPL line).
Third party damage from run-away vessels or vehicles or excavation work.
Metal fatigue (especially the pipe supports for the 8 inch Koppers line).
Pressure surge or "water hammer".

2. Transfer Operations:

The oil spill hazards (many of which may be attributed to operator error or lack of training) associated with transfer operations include:

Overfilling of barge or ship vessel.
Improper hose connections.
Equipment failure such as hose rupture.
Lack of adequate staff.
Communication failures.
Inclement weather.

3. Oil Storage Tanks:

The oil spill hazards associated with oil storage tanks include:

Overfilling (see also transfer operations).
Corrosion in the roofs or floors leading to pinhole leaks or structural failures.

4. Secondary Containment:

In general, secondary containment can fail to contain spilled oil because of:

Inadequate capacity.
Drain valves left open.
Rainfall.
Seepage through permeable liners or bottoms.
Erosion (or washout) of earthen walls.
Cracking of concrete retaining walls.

Attachment F
Risk Estimation Summary

1.) Marine Loading/Unloading Areas:

Fire Hazards:

a.) Dock walkway supporting dock pipelines is made of wood.
Low risk: Walkway has fire water sprinkler system.

b.) Electrical devices in dock shack are not explosion proof.
Low risk: Flammable materials not handled on dock.

Material Handling Hazards:

a.) Runaway vessel could damage dock or pipelines.
Medium risk: Loss limited to linefill and loss during shutdown.

b.) Loading lines that pump both directions do not have check valves by design.

c.) Thermal relief valves protect piping from overpressure.
Low risk: Loss is limited to partial linefill.

Containment:

a.) Spill containment is weakest at blender meters at shore end of dock walkway.
Medium risk. Improve containment in this area.

2.) Dock Transfer Pipelines:

a.) Corrosion of buried pipelines is unknown. Low risk: Excavate and inspect.
Inspect and test cathodic protection devices.

b.) Where depth of cover is suspected of being inadequate, excavate and inspect.
Low risk: Truck traffic over pipeline is very limited.

3.) Storage Tanks:

Fire Hazards:

a.) Control weeds and grasses growing in tank yards. Low risk.

b.) Valves are steel except for a few in south tank yard. Low risk.

c.) Piping 3" or bigger is welded except for small sections in south tank yard.
Low risk.

Material Handling Hazards:

a.) 4 tanks have high level alarms.
Medium risk: Add 3 alarms to protect all tanks.

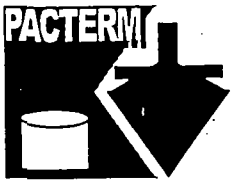
b.) Level gauges are broken because of design errors. Low risk: not necessary.

Containment:

a.) South tank yard has no known impermeable liner. North yard has bentonite.
Low risk: Materials handled are thick and viscous.

4.) Truck/Rail Loading/Unloading:

a.) Spills are likely to drain to containment. Low risk.



SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN

Pacific Terminal Services, Inc. – Portland Terminal

(Facility Name)

7900 NW St. Helens Rd., Portland, Oregon 97210

(Facility Location)

Pacific Terminal Services, Inc.

(Operator Name)

P. O. Box 24005

(Address)

Seattle, Washington 98124-0005

(City, State, Zip)

Northwest Natural Gas

(Owner Name)

220 NW Second Street

(Address)

Portland, Oregon 97209

(City, State, Zip)

TABLE OF CONTENTS (Cont'd)

Page

2.6 Security 2-8
2.7 Inspections, Tests and Records 2-8

LOG OF PLAN REVIEW AND AMENDMENTS

NON TECHNICAL AMENDMENTS

- Non-technical amendments are not certified by a Professional Engineer.
- Examples of changes include, but are not limited to, phone numbers, name changes, or any non-technical text change(s).

TECHNICAL AMENDMENTS

- Technical amendments are certified by a Professional Engineer (§112.5(c)).
- Examples of changes include, but are not limited to, the following if they substantially alter containment or discharge: commissioning or decommissioning containers; replacement, reconstruction, or movement of containers; reconstruction, replacements, or installation of piping systems; construction or demolition that might alter secondary containment stmctures; changes of product or service; or addition/deletion of standard operation or maintenance procedures related to discharge prevention measures. It is the responsibility of the facility to determine, and confirm with the regulatory authority as necessary, what constitutes a technical amendment. The preamble of the rule states that an amendment is required only "when there is a change that materially affects the facility's potential to discharge oil" (67 FR 47091).
- An amendment made under this secfion will be prepared within six (6) months of the change and implemented as soon as possible but not later than six (6) months following preparation of the amendment.
- Technical Amendments affecting various pages within the plan can be P.E. certified on those pages, certifying those amendments only, and will be documented on the log form below.

MANAGEMENT REVIEW

- Management will review this SPCC Plan at least each five (5) years and document the review on the form below (§112.5(b)).

Review/ Amend Date	Signature* (Specify)	Amend Plan (will/will not)	Description of Review Amendment	Affected Page(s)	P.E. Certification (Y/N)

* Typically signed by Manager, Professional Engineer or plan reviewer.

SECTION ONE

General Information

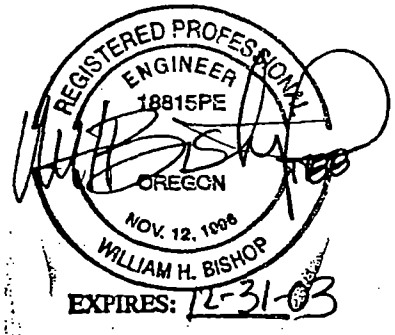
1.2 Professional Engineer Certification

Professional Engineer Certification

By means of this Professional Engineer Certification, I hereby attest, to my best understanding and knowledge, to the following:

- I am familiar with the requirements of 40 CFR Part 112 and have verified that this Plan has been prepared in accordance with the requirements of this Part.
- I or my agent has visited and examined the facility.
- I have verified that this Plan has been prepared in accordance with good engineering practice, including consideration of applicable industry standards.
- I have verified that the required inspection and testing procedures have been established as described in Section 2.
- I have verified that the Plan is adequate for the facility.

(Seal)



William H. Bishop

Printed Name of Registered Professional Engineer

Signature of Registered Professional Engineer

Date: 9-23-03

Registration No.: 18815PE State: Oregon

1.4 Contact List and Phone Numbers

The contact list and phone number reference for the facility is provided in Appendix A.

1.5 Notification Data Sheet

A Notification Data Sheet and Sample Qualified Event Sheet are provided in Appendix A.

1.6 Personnel, Training, and Discharge Prevention Procedures

Training

- The Facility provides the following minimum training to oil-handling personnel prior to assignment of job responsibilities:

- Operation and maintenance of equipment to prevent oil discharges;
- Oil discharge procedure protocols;
- Applicable oil spill prevention (State & Federal) laws, rules, and regulations;
- General facility operations; and,
- The contents of the facility SPCC Plan and applicable pollution control laws, rules, and regulations.

The training program is further described as follows:

Annual spill response exercises as recommended by the PREP program and Incident Command System training on an as needed basis.

Briefings

- The facility conducts prevention briefings for oil-handling personnel at least once a year to assure adequate understanding of the SPCC Plan for the facility. These briefings include discussion of potential discharges or component failures and precautionary measures. The briefing program is further described as follows:

These briefings include discussion of potential discharges or component failures and precautionary measures. SPCC training may be conducted at any of the monthly safety meeting, during the annual spill exercise or information may be derived from posted materials.

Documentation

- Documentation of these Personnel, Training, and Discharge Prevention Briefing programs is maintained for a minimum period of three (3) years. Log forms are provided as follows:

- Training Logs are maintained in an on-site file.
- Discharge Prevention Briefing Logs are maintained in an on-site file.

1.8 Prevention, Response and Cleanup

Prevention

The Facility discharge prevention measures, including procedures for routine handling of products (loading, unloading and facility transfers, etc.) are described in the FRP and as follows:

Discharge Detection by Personnel

The detection of any discharge is most likely by visual observation since the transfer operations are continually manned and the site is relatively compact.

Automated Discharge Detection Systems

The bulk storage tanks are equipped with high-level alarms that would be activated if an uncontrolled overfill of product was to occur.

Facility Inspections

Observations of the tank farm and load rack areas are conducted seven days per week, once per shift. The employee conducting the walk-around observation looks for:

A. Evidence of leaks from tanks, trucks, piping, meters, valves, hoses and appurtenances.

B. Evidence that the integrity of the secondary containment has been breached.

Evidence of leaks or breaches in secondary containment shall be reported to the appropriate personnel identified in the Notification Phone List. If response actions are required, then the FRP should be followed.

Secondary Containment Inspections

Secondary containment observations are conducted visually, on a daily basis, once per shift. Additional structural testing is conducted on a varied basis.

Response Equipment Inspections

Onsite response equipment inspection is conducted on a regular basis, as per PREP Guidance.

Control Room

The facility does have a control room.

Countermeasures

The facility discharge discovery, response and cleanup capabilities are described as follows:

- Ensure the safety of citizens and response personnel
- Control the source of the spill
- Manage a coordinated response effort
- Maximize protection of environmentally-sensitive areas
- Contain and recover spilled material
- Recover and rehabilitate injured wildlife
- Remove oil from impacted areas
- Minimize economic impacts
- Keep stakeholders and public informed of response activities

The contract resources available to the Facility for discharge cleanup are provided in the FRP.

Disposal

The facility has established methods of disposal for recovered materials in accordance with applicable legal requirements. The disposal information is located in the FRP.

1.9 impracticability (as applicable)

The containment and/or diversionary structures or equipment to prevent a discharge are not practicable.

If not, the following provides a description of the impracticability:

1. Piping and associated appurtenances

The majority of the piping falls within secondary containment. For that limited amount of piping that falls outside of secondary containment, prevention and containment is provided by the measures outlined in the Deviations from the Rule section.

Refer to the Container and Potential Spills Table in Section 2 for additional details.

If not practicable, this information is addressed by the FRP.

A written commitment of manpower, equipment and materials required to expeditiously control and remove any quantity of oil discharged is provided in the FRP.

1.11 Conformance with other Requirements

Describe conformance with other applicable requirements and effective discharge prevention and containment procedures in-place at the facility. Include a description of compliance with more stringent State rules, regulations, and guidelines, if any:

Conformance with other applicable requirements and effective discharge prevention and containment procedures in place at the Facility are as follows:

1. *This plan incorporates response planning requirements of the Oil Pollution Act (OPA) Established under the authority of section 311 (j) (1) (c) of the Clean Water Act, the Federal Oil Pollution Prevention Program is designed to prevent the discharge of oil to navigable waters and to contain such discharges when they occur.*

2. *The requirements for an Emergency Contingency Plan under the U.S. Coast Guard Regulations 33 CFR 154.*

3. *The requirements of an emergency contingency plan under the Resource Conservation and Recovery Act (RCRA) 40 CFR Parts 265, Subparts C and D.*

4. *The emergency procedures required by the Department of Transportation (DOT) as identified in 49 CFR 192.615, 195.402 and similar regulations issued by the state agencies.*

5. *The Occupational Safety and Health Act requirements for an employee emergency plan and fire prevention plan as described in 29 CFR 1910.38 and the emergency planning and response requirements according to 29 CFR 1910.119(n) and 29 CFR 1910.120.*

2.1 Container and Potential Spills Table

- The potential spills sources at the facility are summarized in the following table:

Oil Source	Associated Substance (Contents) *(Oil)*	Source Capacity *(Bbls)*	Potential Failure	Rate of Flow *(Bbls/hr)*	Direction of Flow	Containment System(s)*
Aboveground Fixed Containers						
T-1	IFO	60,596	Rupture/ Overfill	2100	Out of Tank	Tank Farm Dike
T-2	MDO	60,596	"	2000	Out of Tank	Tank Farm Dike
T-3	#6 FO	20,311	"	2000	Out of Tank	Tank Farm Dike
T-4	IFO	80,651	"	1100	Out of Tank	Tank Farm Dike
T-5	Cutter	55,016	"	1100	Out of Tank	Tank Farm Dike
T-7	PS300	11	"	1000	Out of Tank	Concrete Dike
Completely and Partially Buried Tanks						
None						
Mobile and Portable Containers						
None						
Truck or Rail Loading/Unloading Rack						
Truck Rack			Rupture/ Overfill		Out of Tank	Sloped to Drain; Drains to Tank Farm
Rail Pump Off			Rupture; Hose/Valve Failure		Out of Tank	Earthen/Concrete Dikes
Other Potential Spill Sources (Piping, Surface Impoundments, etc.)						
See attached						

- The material and construction of bulk storage containers are compatible with the material stored and conditions of storage such as pressure and temperature.
- All fixed bulk storage container installations are constructed so that a means of secondary containment is provided for the entire capacity of the largest single container and sufficient freeboard to contain precipitation.
- Diked areas are sufficiently impervious to contain discharged oil from reaching navigable water in substantial quantities.
- Visible discharges, which result in a loss of product from containers will be promptly corrected and any accumulations of oil in the diked area(s) will be promptly removed.
    - See Sec. 2.3.1 for further details.

Facility Containment, Drainage and Water Treatment

2.3.1 Secondary Containment Systems

Containment ID	Drainage Method	Type of Containment & Material of Construction
See Attached		

Storm water pumped from the dock in collected in the oil water separator in the old tank farm. Small quantities of oil are removed with sorbent pads; large quantities are pumped out. Clean sump water is drained to the old tank farm

2.3.5 Facility Undiked Drainage to Surface Waters

- The facility <u>does</u> have the potential to discharge into undiked areas.
  - **If yes**, The facility undiked areas <u>do not</u> flow to ☒ ponds ☒ lagoons ☐ catchment basins ☐ other
  - Describe undiked drainage or <u>if not</u> addressed, describe equivalent environmental protection:

Undiked areas flow either to catch basins, two of which flow to an oil/water separator and one of which flows off-site to NW Natural, or the area doesn t drain and storm water is left to percolate into the soil.

2.4 Facility Transfer Operations, Pumping and Facility Process

2.4.1 Facility Piping

The facility <u>does</u> have buried piping. Corrosion protection for all new and replaced buried piping is provided as follows (check all that apply):

- Wrapping and Coating

When a pipe section is exposed, it is examined and corrective action taken as necessary.

Describe the facility piping systems (aboveground and buried):

The facility has buried piping which is maintained in accordance with the practices and standard of the National Association of Corrosion Engineers (NACE) and ASME B31.4.

2.4.2 Out of Service Piping

Out of service piping connections are capped or blank flanged and marked when the piping is not in service or in standby service for extended periods.

2.4.3 Pipe Supports

- Pipe supports <u>are</u> designed to minimize abrasion and corrosion and allow for expansion and contraction.

Pipe supports are designed to minimize abrasion and corrosion and allow for expansion and contraction

Drains and outlets on tank tmcks and tank cars are checked for leakage before loading/ unloading or departure and, if necessary, are tightened, adjusted or replaced. If not, describe equivalent environmental protection:

Railcar unloading is manned at all times. Checks are performed before unloading and prior to departure.

2.6 Security

The Facility is fully fenced and gated.

Entrance gates are locked and/or guarded when the facility is unattended or not in production.

- Any valves which permit direct outward flow of a container's contents ☒ have (☐ N/A) adequate security measures so that they remain closed when in non-operating or standby status

Valves are observed for leaks, drips or other potential problems. Valves are also observed on a random basis by facility personnel during the normal course of business.

Starter controls on all product pumps in non-operating or standby status are in the off position and located at sites accessible only to authorized personnel. Describe pump starter control security or if not locked, describe equivalent environmental protection

Both manual and automated pumps are in operation at the facility. The access to these pumps and pump controls is limited to facility personnel or facility agents.

When facility piping is not in service or in standby service for an extended time, the loading/unloading connections are securely capped or blank flanged. This applies to piping that is emptied of its liquid content either by draining or by inert gas pressure.

When piping is permanently taken out of service, the pipe is drained. The pipe will be blind flanged. The pipe then may be left empty, filled with inert gas or otherwise plugged or otherwise sealed.

Facility lighting is commensurate with the operation and the type and location of the facility to assist in the discovery of discharges and to prevent discharges occurring through acts of vandalism. Describe facility lighting or, if lighting is not commensurate, describe equivalent environmental protection:

Lighting at the facility is adequate to discover any leaks that might occur. A video camera surveillance system also monitors the majority of the facility from the control room.

2.7 Inspections, Tests and Records

Container Testing and Inspections

- Describe the facility aboveground bulk storage container integrity testing and inspection program.

Reference supporting documentation maintained separately, as appropriate:

Discharge inspection and testing records are maintained at the facility in the daily log book.

Documentation:

Records of the inspections and tests (including those maintained under usual and customary business practices), signed by the appropriate supervisor or inspector are retained on file for a minimum period of three (3) years.

Sample inspection and test records are provided in Appendix B. These and/or substantially equivalent forms are used by terminal personnel to document inspections.

APPENDIX A – NOTIFICATION

Contact List and Phone Numbers

The following is a contact list and phone number reference for the Facility:

Reporting Guide
Terminal Office 503 – 286-5321
Operations Manager: Troy Goodman Day: 206-447-3051 Cell: 206-571-5483 Pager: 206-810-8592
Terminal Manager: Bob Robertson Day: 503-240-3452 (206-938-6506 pager service) Cell: 206-255-5010 Pager: 206-977-4528
Terminal Superintendent: Tina Garrett Day: 503-240-3452 Cell: 503-572-9355 Pager: 503-920-8639
National Response Center Primary: 00-424-8802 Alternate: 202-267-2675

Note: For cleanup contractors, Federal, State and Local Agencies and other references' contact telephone numbers, refer to the FRP.

APPENDIX A – NOTIFICATION

Submittal of Information to Regional Administrator for Qualified Discharge(s) Continued

Describe the Facility (maps, flow diagrams and topographical maps attached as necessary):

APPENDIX A – NOTIFICATION

Notification Data Sheet

Date: _____ Time: _____

INCIDENT DESCRIPTION

Reporter's Full Name: _____ Position: _____

Day Phone Number: _____ Evening Phone Number: _____

Company: _____ Organization Type: _____

Facility Address (Street/City/State/Zip): _____

Owner Address (Street/City/State/Zip): _____

Facility Latitude: _____ Facility Longitute: _____

Spill Location (if not at Facility): _____

Responsible Party's Name: _____ Ptione Number: _____

Responsible Party's Address: _____

_____

Source and/or cause of discharge:

_____

Nearest City/County/State/Zip: _____

Nearest Section/Township/Range/Borough: _____

Distance from City: _____ Direction from City: _____

Container Type/Storage Capacity: _____ Facility Oil Storage Capacity: _____

Material:

Total Quantity Released	Water Impact (Yes or No)	Quantity into Water

RESPONSE ACTIONS(S)

Action(s) taken to Correct, Control or Mitigate Incident:

_____

Number of Injuries: _____ Number of Deaths: _____

Evacuations: _____ Number Evacuated: _____

Damage Estimate: _____

More information about impacted medium:

_____

CALLER NOTIFICATIONS

National Response Center (NRC): 1-800-424-8802

Additional Notifications (Check all applicable): ____USCG ____EPA ____State ____Other

ADDITIONAL INFORMATION

Any information about the incident not recorded elsewhere in this report:

_____

Note: Do not delay notification pending collection of all information.

APPENDIX B – LOGS

Inspection Log Checklist

Frequency of Inspection: _____

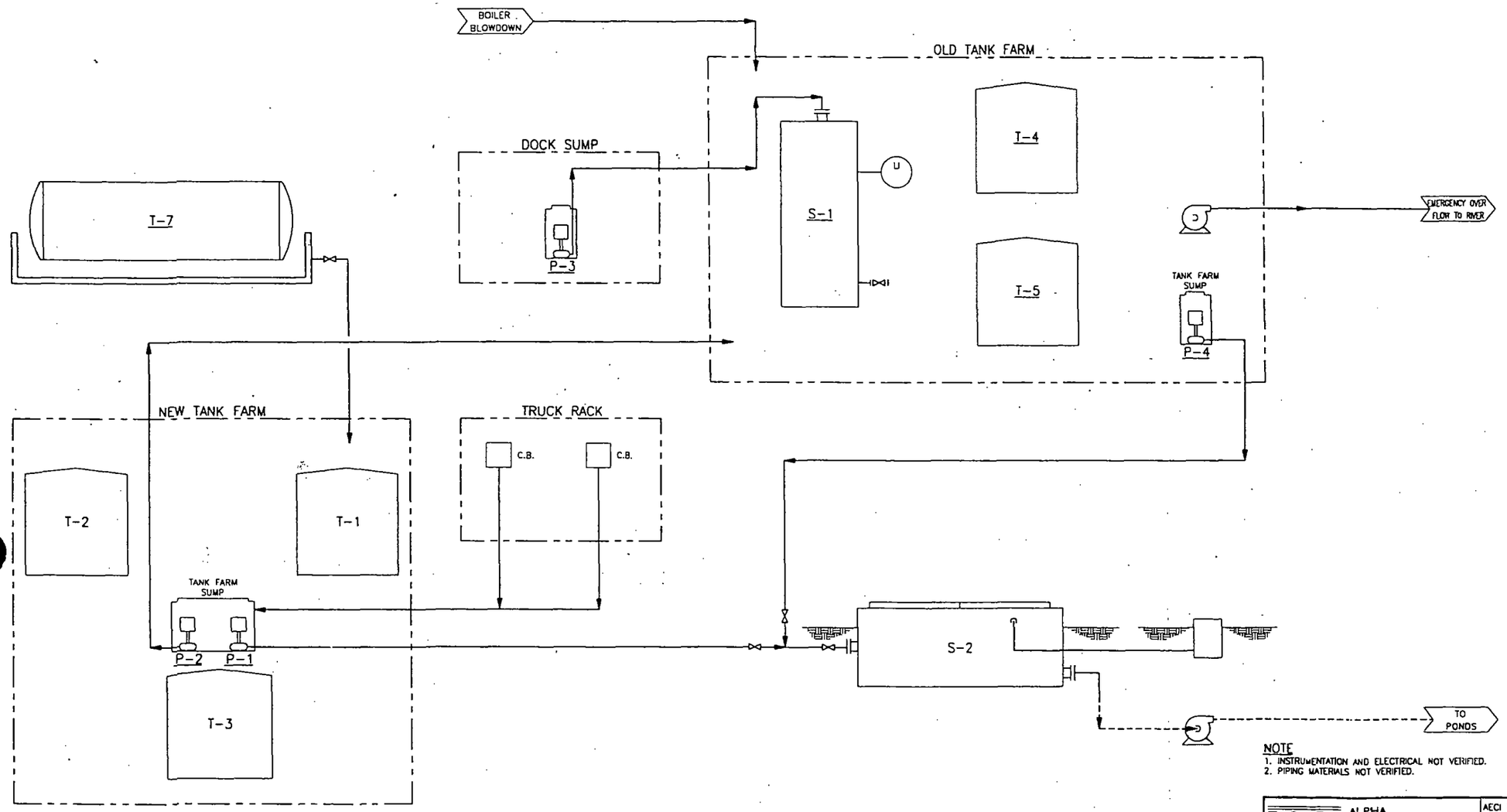
Date of Inspection: _____ Inspector: _____

Onshore Facility – Component	Adequate (Y/N)	Comments
Visible discharges, which result in a loss of product from containers, will be promptly corrected and any accumulations of oil in the diked area(s) will be promptly removed.		
Container Surface (Walls, Roof)	☐ Yes ☐ No	
Container (Foundation/Supports/Cradles)	☐ Yes ☐ No	
Aboveground Piping:		
Metal Surfaces	☐ Yes ☐ No	
Flange Joints	☐ Yes ☐ No	
Valve Glands and Bodies	☐ Yes ☐ No	
Catch Pans	☐ Yes ☐ No	
Pipeline Supports	☐ Yes ☐ No	
Secondary Containment (Walls, Floor)	☐ Yes ☐ No	
Bulk Storage Container Integrity Test	☐ Yes ☐ No	
Buried Piping – Integrity & Leak Testing	☐ Yes ☐ No	

APPENDIX C

Facility Diagrams

T-7	T-2	P-1 & P-4	P-2	T-1	T-3	P-3	S-1	T-4	T-5	S-2
DD #2 STORAGE TANK	DD #2 STORAGE TANK	TANK FARM SUMP PUMP	EMERGENCY PUMP	F.O. #6 STORAGE TANK	F.O. #6 STORAGE TANK	DOCK SUMP PUMP	DOCK SEPARATOR	F.O. #6 STORAGE TANK	CUTTER OIL STORAGE TANK	SEPARATOR W/ SKIM TANK
TYPE: HORIZONTAL SIZE: 10'-0"ø x 35'-1" L CAPACITY: 475 BBLS. DESIGN: ____ MATL: ____	TYPE: CONE ROOF SIZE: 65'-0"ø x 48'-0" HT. CAPACITY: 80,590 DESIGN: ____ MATL: ____	TYPE: SUBMERSIBLE FLOW RATE: ___ GPM @ ___ TDH MOTOR: ___ HP @ ___ RPM MFG: ____ MATL: ____	TYPE: SUBMURSIBLE FLOW RATE: ___ GPM @ ___ TDH MOTOR: ___ HP @ ___ RPM MFG: ____ MATL: ____	TYPE: CONE ROOF SIZE: 65'-0"ø x 40'-0" HT. CAPACITY: 60,596 BBLS. DESIGN: ____ MATL: ____	TYPE: CONE ROOF SIZE: 55'-0"ø x 48'-0" HT. CAPACITY: 20,311 BBLS. DESIGN: ____ MATL: ____	TYPE: SUBMERSIBLE FLOW RATE: ___ GPM @ ___ TDH MOTOR: ___ HP @ ___ RPM MFG: ____ MATL: ____		TYPE: CONE ROOF SIZE: 117'-3"ø x 42'-0" HT. CAPACITY: 60,651 BBLS DESIGN: ____ MATL: ____	TYPE: CONE ROOF SIZE: 114'-8"ø x 30'-0" HT. CAPACITY: 35,018 BBLS. DESIGN: ____ MATL: ____	TYPE: ____ SIZE: ____ ø x ____ L CAPACITY: ____ BBLS. DESIGN: ____ MATL: ____



NOTE
1. INSTRUMENTATION AND ELECTRICAL NOT VERIFIED.
2. PIPING MATERIALS NOT VERIFIED.

ALPHA ENGINEERS and CONSTRUCTORS, INC.
2828 SW 35th Ave, PORTLAND, OR 97210 tel(503)297-3177/fax(503)227-2344

AECI PROJECT NUMBER 19-03

DRAWING NO.	REFERENCE DRAWINGS	REV.	DATE	REVISED	DRAWN	CKD.	CIV/STRL	MECH/PIPING	ELEC/INST	SAFETY	P.E.
		A	4/28/03	FOR REVIEW AND COMMENTS	OKB	WHB					

PACTERM
PACIFIC TERMINAL SERVICES, INC
7500 St. Helens Rd., Portland, Oregon 97210

CLIENT APPROVALS

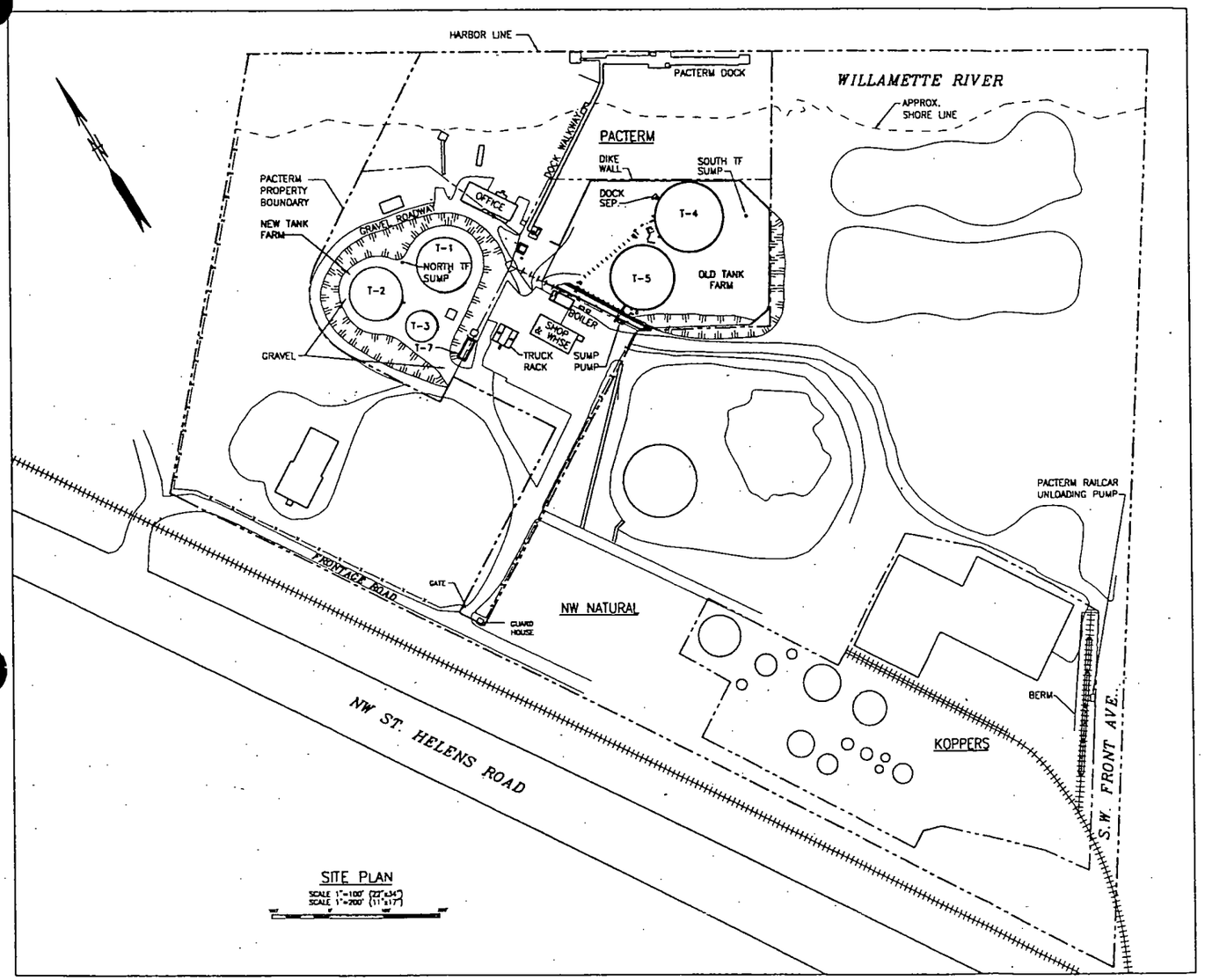
REV	BY	DATE

SCALE: 1"=100	DATE	
DRAWN BY	OKB	2/13/03
DESIGNED BY		
CHECKED BY		
WORK ORDER	19-03	22354

PORTLAND TERMINAL
PORTLAND, OREGON
2003 SPCC
DRAINAGE SYSTEM

DATE	DRAWING NO	SHEET	REV.
2/13/03	1903-D-01	1 OF 1	A

<CPD: 07/01/03 [TIME: 08:36 AM] > 803dr1a.dwg



SITE PLAN

SCALE 1"=100' (22"x34")
SCALE 1"=200' (11"x17")

TANK DATA

TANK NO.	DIAMETER	HEIGHT	TYPE	BARRELS	SERVICE
1	95'-0"	48'-0"	CONE ROOF	60,567	F.O. #6
2	95'-0"	48'-0"	CONE ROOF	60,567	DO #2
3	55'-0"	46'-0"	CONE ROOF	20,301	F.O. #6
4	117'-2"	42'-0"	CONE ROOF	80,613	F.O. #5
5	114'-6"	30'-0"	CONE ROOF	54,990	CUTTER OIL
7	10'-0"	35'-1"	HORIZONTAL	501	DO #2

SPCC PLAN

DRAWING LIST

DWG NO.	SHEET NO.	REV.	DATE	TITLE
CIVIL				
1903-C-01	1 OF 1	A	4/28/03	SITE PLAN AND DRAWING INDEX
1903-C-02	1 OF 1	A	4/28/03	FACILITY DRAINAGE PLAN
1803-C-03	1 OF 1	A	4/28/03	EVACUATION ROUTE PLAN
PROCESS & INSTRUMENTATION DIAGRAM				
1803-D-01	1 OF 1	A	4/28/03	DRAINAGE SYSTEM

NOTE

1. ALL PIPING ARE APPROXIMATE.

DRAWING NO.	REFERENCE DRAWINGS	REV.	DATE	REVISED	DRAWN	CKD.	CIV/STRL	MECH/PIPING	ELEC/INST	SAFETY	P.E.
		A	4/28/03	FOR REVIEW AND COMMENTS	DKB	MHB					

PACIFIC TERMINAL SERVICES, INC.
7900 SE Helens Rd., Portland, Oregon 97210

CLIENT APPROVALS

REV	BY	DATE

ALPHA ENGINEERS and CONSTRUCTORS, INC.
7939 NE 33rd Ave, Portland, OR 97218 Tel(503)227-3317/Fax(503)227-3244

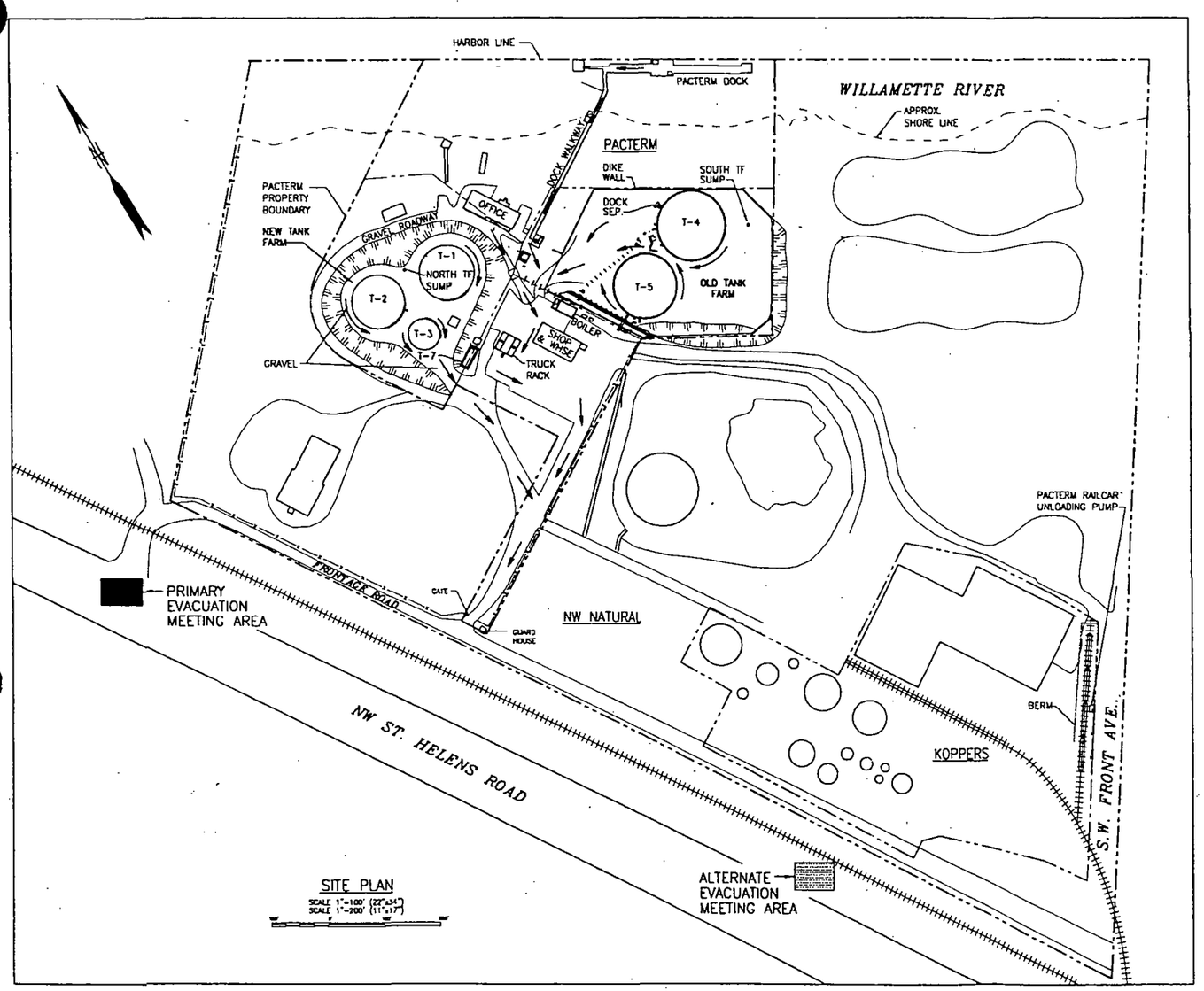
AECI PROJECT NUMBER 19-03

SCALE: 1"=100'		DATE
DRAWN BY	DKB	2/13/03
DESIGNED BY		
CHECKED BY		
WORK ORDER	19-03	22X34

PORTLAND TERMINAL
PORTLAND, OREGON
2003 SPCC
SITE PLAN

DATE	DRAWING NO.	SHEET	REV.
2/13/03	1903-C-01	1 OF 1	A

1903c01a.dwg <DSD: 04/23/03 [TIME: 12:28 AM]>



TANK DATA

TANK NO.	DIAMETER	HEIGHT	TYPE	BARRELS	SERVICE
1	55'-0"	48'-0"	CONE ROOF	60,567	F.O. #6
2	95'-0"	48'-0"	CONE ROOF	60,567	00 #2
3	55'-0"	48'-0"	CONE ROOF	20,301	F.O. #5
A	117'-2"	42'-0"	CONE ROOF	80,613	F.O. #6
5	114'-6"	30'-0"	CONE ROOF	54,990	CUTTER OIL
7	10'-0"	35'-1"	HORIZONTAL	501	00 #2

LEGEND

PRIMARY EVACUATION ROUTES

ALTERNATE EVACUATION ROUTES

DRAWING NO.	REFERENCE DRAWINGS	REV.	DATE	REVISED	DRAWN	CKD.	CIV/STRL	MECH/PIPING	ELEC/INSTR	SAFETY	P.E.
		A	4/28/03	FOR REVIEW AND COMMENTS	DKB	WHB					

PACIFIC TERMINAL SERVICES, INC.
7900 St. Helens Rd., Portland, Oregon 97210

CLIENT APPROVALS		
REV	BY	DATE

ALPHA ENGINEERS and CONSTRUCTORS, INC.
2929 NW 31st Ave., Portland, OR 97210 Tel:(503)227-3717 Fax:(503)227-3544

AECI PROJECT NUMBER 19-03

SCALE 1"=100'		DATE
DRAWN BY	DKB	2/13/03
DESIGNED BY		
CHECKED BY		
WORK ORDER	19-03	22934
DATE	2/13/03	

PORTLAND TERMINAL
PORTLAND, OREGON
2003 SPCC
EVACUATION ROUTE PLAN

DRAWING NO. 1903-C-03 | SHEET 1 OF 1 | REV. A

APPENDIX D

Oil Spill Contingency Plan

[See Facility Response Plan]

APPENDIX E

Calculations

Secondary Containment Calculations

		Volumetric Capacity of Containment Area												Secondary Containment Capacity based U.F.C					Containment Capacity	
No.	Area	Total Containment Area Note 3	Top of Wall or curb Note 3	Ave. Containment Area grade elev. Note 2	Dike wall elev. minus ave. grade elev. $H_T = H_1 - H_2$	Volumetric Capacity of Containment Area without Tanks, $V_{TF} = A_{TF} \times H_T \times 7.48 / 42$	Storage Tank Number	Storage Tank Cap.	Storage Tank Dia.	Storage Tank Areas, $A_{TK} = \pi r^2$ Largest Tank = A_{LT}	Total Tank Area, A_{TKTOT} = sum (A_{TK})	Containment area excluding Tanks area, $A_T = A_{TF} - A_{TKTOT}$	Volumetric Capacity of Containment area excluding Tanks, $V_T = H_T \times A_T \times 7.48/42$	Capacity of Largest Tank Note 4	Rainfall 25 yr. storm, 24 hour period, V_{FT} = (3.5"/12) x (ATF) x 7.48/42 Note 1	20 min fire protection from Fire Dept. monitor V_{FM} = 20 min x 50 gpm /42	20 min fire protection from plant system, VFP =((0.10gpm / FT2) x AT1) (20 min) (FT3 / 7.48/42	Total Volumetric Cap. reqd. per UFC $V_C = V_{LT} + V_{RF} + V_{FH}$	Containment Cap. includes area of largest tank $V_{ACT} = (A_T + A_{LT}) \times H_T \times 7.48/42$ Note 5	Surplus Capacity $V_S = V_{ACT} - V_C$
		(FT^2)	(FT)	(FT)	(FT)	(bbls)		(bbls)	(FT)	(FT^2)	(FT^2)	(FT^2)	(bbls)	(bbls)	(bbls)	(bbls)	(bbls)	(bbls)	(bbls)	(bbls)
		A_{TF}=	H_1=	H_2=	H_T=	V_{TF}=	I.D.	Cap=	Dia.	A_{TK} =	A_{TKTOT} =	A_T =	V_T =	V_{LT} =	V_{RF} =	V_{FM} =		V_C =	V_{ACT} =	V_S =
1.0	New Tank Farm																			
		57,589	10.17	0	10.17	104,307	1	60,598	95	7,088	16,552	41,037	74,327	60,598	2,991	24	45	63,613	87,165	23,552
							2	60,598	95	7,088										
							3	20,311	55	2,376										
2.0	Old Tank Farm																			
		86,552	11.40	0	11.40	175,725	4	80,654	117	10,751	21,138	65,414	132,809	80,654	4,496	24	68	85,174	154,637	69,463
							5	55,018	115	10,387										
3.0	Concrete Containment																			
		676 NOTE 6	4.50	0	4.50	3,044	7	501	10	79	79	0	0	501	35	24	0	560	676	116
4.0	Railcar Unloading																			
		600	7	7	7	7	Railcar	500	n/a	n/a	n/a	n/a	n/a	500	?	7	0	7	?	7

Notes:

1. Rainfall data based on Figure 28 Isopluvials of 25-yr 24-hr precipitation Map, Source U.S. Dept. of Comm. NOAA NWS, Office of Hydrology.
2. Containment area elevations based on spot survey of low points May 2003.
3. Containment areas calculated from Site Plan, dwg. 1903-C-01 dated 4/28/03.
4. Calculations subject to rounding error.
5. Fire protection flow rate of 20 min. at 50 gpm based on local Fire Department requirements.
6. Actual area measured on May 2003.

Client: Pacific Terminal Services, Inc.
Site: Portland Terminal

Storage Tank Capacity Calculations

Work Order: 19-03

Tank No.	Diameter	Height	Radius	Gallons	Barrels	Service
				(Area) x (Height) x 7.4805	Gals/42	
1	95	48	47.5	2,545,124.061	60,598	F.O. #6
2	95	46	47.5	2,545,124.061	60,598	D.O. #2
3	55	48	27.5	853,074.824	20,311	F.O. #6
4	117.166	42	58.583	3,387,450.878	80,654	F.O. #6
5	114.5	30	57.250	2,310,748.803	55,018	Cutter Oil
7	10	35.833	5	21,052.5	501	D.O. #2

APPENDIX F

OIL SPILL SCENARIOS

These scenarios were developed for the Portland facility, formally owned by Pacific Northern Oil. The Portland facility has been transferred to Pacific Terminal Services, Inc. The scenarios described in this appendix are still applicable to the same facility.

APPENDIX F

OIL SPILL SCENARIOS

The following three oil spill scenarios, inciuding the causal accidents, are all hypothetical oil spill events. Because of space limitations, the accounts of the spill responses are necessarily simplified and not all alternative response options and required decisions are considered or described. The purpose of these scenarios is to illustrate the use of the facility oil spill response plan for successfully managing an oil spill response operation. In reality, many problems not addressed in these scenarios are likely to arise after any significant oil spill.

SMALL OIL SPILL (50 BARRELS) SCENARIO

FIRST DAY OF SPILL

An oil tank barge carrying 20,000 barrels of No. 6 Fuel Oil in bulk was moored at the PNO facility dock at 0700 on May 26, 1994. The sky was overcast and the temperature was 60 degrees Fahrenheit. The wind was blowing from the southwest at 9 miles per hour. The current in the main channel of the Willamette river was ebbing at 1 knot. The barge hose was connected to the dock pipeline riser. The dock operator and the barge tankerman conducted the pre-transfer conference, completed the Declaration of inspections, and each took a facility radio for communication during the oil transfer. The pipeline valves were opened to one of the 60,000 barrel storage tank at the facility, which prior to the transfer contained 10,000 barrels of oil product. At 0800 the barge pumps were started and the oil flow was directed into the barge hose to transfer the oil through the facility pipeline to the storage tank. The oil flow rate was increased slowly to approximately 3,500 barrels per hour. As the flow rate increased, the fluid pressure built up in the pipeline (to the normal operating pressure of 100 psig). At 0830, a gasket in the dock pipeline failed and oil began to spray out into the water without being noticed by the dock operator who had returned to the fuel oil dock personnel shelter. At 0843, the dock operator noticed that oil was spraying from the failed gasket.

The dock operator immediately shouted at the barge crew to shutdown. Due to the noise of the barge engines, the barge tankerman could not hear the dock operator, but saw that the dock operator was waving his arms and was moving rapidly toward the riser valve. The dock operator radioed the barge tankerman to shut down the barge pumps and close the valves to the barge hose. Then, he immediately manually closed the pipeline riser valve (0845), radioed the shift supervisor to close the pipeline valve at the shore end of the dock walkway, and thereby, isolated the leaking pipeline.

To limit the amount of oil spill, the dock operator radioed the tankerman to align the valves on the barge as if to receive oil from the facility. When this was done, the dock operator opened the dock riser valve and the shift supervisor opened a vent valve at the shore end of the dock walkway and the leaking pipeline began to drain by gravity into the barge. To speed this process, the tankerman started a barge pump to draw suction from the facility dock pipeline. This was accomplished at 0900. From the time of the failure of the pipeline gasket until the line was drained, about 50 barrels leaked into the water under the dock.

As the oil flowed into the water, it immediately spread out into a thick black layer bordered on one side by the barge and on the other sides by the river shoreline. The oil was held between the shoreline and the barge by a back eddy in the slack water along the shoreline. There was no visible environmental damage.

When the oil flow had been stopped and the pipeline isolated, the shift supervisor immediately radioed the dock operator and the barge tankerman to verify that there were no injuries or fires.

Then (0900), the shift supervisdr proceeded to the dock to assume the position of Incident Commander until the Qualified Individual might arrive and to visually assess the following spill conditions which he noted on the Oil Spill Report Form, found in the Oil Spill Plan Field Manual which was located in the fuel oil dock personnel shelter

Spill Location at the Facility:	Fuel oil dock
Type of Oil Spill:	No. 6 Fuel Oil
Cause of Spill:	Pipeline gasket failure
Amount of oil spilled:	50 barrels (estimated)
Date of Spill:	May 26, 1994
Time of Spill:	0845 (approximately)
Extent of Injuries, if any:	None
Damage on-site:	Oil adhering to side of barge and dock pilings
Damage off-site:	None
Corrective Actions Taken:	Discharge stopped

At 0850, while the pipeline was being drained, the shift supervisor initiated the notification procedures by following the Call Out Checklist in the Field Manual and contacting, in the following order, the facility manager (QI) (who was reached at his office in Seattle), the Primary Response Contractor (PRC), and the gate guard, and giving each of them the information about the oil spill.

Upon receiving the information about the spill from the shift supervisor (at 0855), the facility manager immediately telephoned the alternate QI, and relayed the information about the spill (including the information that the estimated amount of oil spilled was 50 barrels of No. 6 fuel oil and that the spilled oil was not yet contained) and asked the alternate QI to make the required government notifications, including the local USCG, the regional office of the ODEQ, and the Portland Fire Department. This involved telephoning and relating the circumstances of the spill five (5) times. The agency notifications took approximately 25 minutes.. The alternate QI then telephoned the others on the Call Out Checklist to have the others who would fulfill the other incident command system roles stand-by in case they might be needed.

In his call to the PRC, the shift supervisor requested that the PRC respond immediately with personnel and equipment to contain and recover the spilled oil on the water. The PRC began mobilizing a response boat, 1,000 feet of containment boom on a trailer, a vacuum truck, and a rope mop to collect heavy oil.

The shift supervisor used the hydrogen sulfide monitor to verify that there was no health hazard in breathing vapors from the spilled oil. The air monitor indicated that there was no detectable level of hydrogen sulfide in the air. The shift supervisor specified that all personnel involved in the spill response must wear protective clothing including hard hats, rubber boots, mbber gloves, rain coat and coveralls, and USCG approved floatation devices.

After retrieving (from the warehouse), and dressing in, the required PPE, the shift supervisor launched the spill response boat from the dock service platform. He then climbed down the dock ladder to the boat, started the motor, motored to the boom storage area, and retrieved the towing line for the containment boom. Meanwhile, the dock operator had proceeded to the oil containment boom storage box and when the shift supervisor arrived in the boat, the dock operator assisted the shift supervisor in launching the boom.

When the boom was pulled out of the storage box, it was towed around the barge and the dock by the shift supervisor in the boat. At the upstream shoreline, the shift supervisor passed the towing line to the dock operator on shore, who pulled the end of the boom onto the river bank

and tied the end of the boom off to a large driftwood log. This action completed containment of the spill at 0930.

The PRC, the local USCG and the local WDOE representatives all arrived at approximately 1000. The shift supervisor briefed them on the nature and extent of the spill and the status of the response. It was agreed that the PRC would proceed with deploying a rope mop to recover oil from the surface of the water inside the containment boom. In addition, oleophilic snares would be used to pick up the heavy tar-like oil in areas where the rope mop could not reach. The rope mop would be tended with a vacuum truck which would provide 100 barrels of interim storage capacity for recovered oil and water.

It was decided by the USCG and the WDOE representatives that a Unified Command was not required. It was also agreed that communication between the QI and the PRC could be managed verbally or with facility radios, one each given to the QI, the Pulp Mill Shift Coordinator and the PRC supervisor. It was agreed that communication between the shift supervisor and the agencies would be face-to-face or by telephone, as required. Finally, it was decided that personnel and equipment could be deployed right at the river shoreline. The response would only require one small boat to be launched which would work in and around the fuel oil dock.

At 1045, the shift supervisor signed the PRC's form authorizing the work. With knowledge of this action plan, the PRC deployed the boat with two people in it to hook up the rope mop. The rope mop machine was positioned on the shore and the vacuum truck was parked at the shore end of the dock walkway with a hose laid to the shoreline. The vacuum truck driver operated the vacuum truck. One man was assigned the task of operating the rope mop machine. Once the rope mop was in operation (at 1145), the two people in the boat spread snares in out of the way places to collect the floating oil. As the snares became saturated with oil they were individually retrieved with a pike pole and placed into plastic bags in the boat. When full, the plastic bags were manually carried to a stock pile area located on the shore end of the dock walkway where two layers of 10 mill plastic were spread out as a secondary containment area. The edges of the plastic were laid over hay bales furnished by the PRC.

When the QI arrived (1300), he immediately met with the dock operator and the On-duty Pulp Mill Shift Coordinator (Incident Commander) and received the following briefing on the nature and extent of the spill: The oil transfer operation was shutdown, there were no injuries or fire, the spilled oil was completely contained, air monitoring indicated no health hazard in the air, damage mitigation steps had been taken, the PRC had arrived and had deployed equipment, other facility response team members were on stand-by, and all notifications had been made. Having received the briefing, the QI announced that he was assuming command of the spill response.

The QI asked the facility mechanic to proceed to the fuel oil dock and to repair the leaking gasket. The pipeline gasket was removed and replaced by the facility mechanic and the dock operator. The pipeline was vented and refilled and pressured to 225 psig as a hydrostatic test which was passed satisfactorily. With the permission of the government representatives, the oil transfer operation was allowed to be restarted at 1345 so that the oil barge could be unloaded before the oil in the barge cooled. The transfer operation was started slowly so that the pipeline gasket could be watched closely for renewed leakage. No leakage occurred.

During the oil transfer, the PRC furnished and deployed additional boom which was carefully placed along the dock side of the oil barge. The side of the oil barge was manually wiped clean by the contractor personnel in the response boat.

When the oil transfer was completed at 1845, the oil transfer systems were shutdown and the barge hose disconnected and restowed on the barge. After completing the normal paper work, the oil containment boom on the outside of the barge was disconnected and the barge was very slowly moved away from the dock. This was done slowly enough so that none of the spilled oil was entrained under the containment boom that had been placed along the dock side of the barge.

With the recovery operation underway, the agency representatives departed at 1400 with the plan to return the following day to check on the progress of the recovery and clean-up.

During the day, the QI had telephoned the person fulfilling the ICS Planning role, to prepare a disposal plan for the oil soaked snares and kitty litter.

By 2045, the rope mop had collected an estimated 45 barrels of oil from the water surface. In addition, 200 snares had been spread and recovered approximately 3 barrels of oil and water. At this point it was decided that absorbent sweeps would be placed in the water and tied to the dock pilings to absorb floating oil as the tide moved the water up and down over night. At the end of the day, the recovered oil product in the vacuum truck was taken to the oil storage tank and discharged into the aboveground storage tank. A relief dock operator remained on-site overnight to monitor the floating booms and absorbent sweeps.

SECOND DAY

During the next day, the PRC disconnected the rope mop equipment, retrieved the soaked absorbent sweeps, and laid new sweeps in the area to pick up any oil that might float off of the dock piling as the tide washed water up and down over them.

The facility ICS Planning person prepared a disposal plan in which the debris was determined to be a "non-dangerous waste", according to state regulations. The oil soaked snares would be manually wrung out by the PRC. Free liquid oil and water wrung from the snares would be processed through a portable oil\water separator from which the oil would be recycled into the facility fuel oil tank and the water (with oil concentration below 10 mg/l) processed through the facility process water system. The snares and the sweeps would then be rebagged and transported to a commercial incinerator for energy recovery. The soaked kitty litter contained in drums would be transported to an authorized landfill for disposal.

THIRD DAY

The sweeps were changed once more in the morning, but by the afternoon only unrecoverable sheen remained. With the permission of the USCG and the WDOE, the containment boom and response boat were removed from the water and transported in a lined truck to the PRC's facility for decontamination. Meanwhile, the PRC would furnish, on a rental basis, 1,000 feet of containment boom which would be kept on a trailer in the vicinity of the fuel oil dock to be used in case of another oil spill event until the facility boom could be cleaned and returned.

The solid wastes were processed and transported for recycle and disposal. Finally, the solid debris secondary containment was removed and disposed of as normal trash.

Two weeks later the facility manager held a post-spill incident review meeting. Overall, an estimated 96% of the oil spilled into the water was recovered and recycled. No recommendations for changes in the Spill Plan were made.

MEDIUM OIL SPILL (857 BARRELS) SCENARIO

FIRST DAY OF SPILL

An oil tank barge carrying 20,000 barrels of No. 6 Fuel Oil in bulk was moored at the PNO facility dock at 0700 on May 26, 1994. The sky was overcast and the temperature was 60 degrees Fahrenheit. The wind was blowing from the southwest at 9 miles per hour. The current in the main channel of the Willamette river was ebbing at 1 knot. The barge hose was connected to the dock pipeline riser. The dock operator and the barge tankerman conducted the pre-transfer conference, completed the Declaration of Inspections, and each took a facility radio for communication during the oil transfer. The pipeline valves were opened to one of the 60,000 barrel storage tank at the facility, which prior to the transfer contained 10,000 barrels of oil product. At 0800 the barge pumps were started and the oil flow was directed into the barge hose to transfer the oil through the facility pipeline to the storage tank. The oil flow rate was increased slowly to approximately 3,500 barrels per hour. As the flow rate increased, the fluid pressure built up in the pipeline (to the normal operating pressure of 100 psig.

At 0830, the driver of a construction truck maneuvering near the shore end of the dock walkway inexplicably drove his vehicle into the dock piping. The collision fractured the oil transfer pipeline in half and oil immediately gushed out of both ends of the fractured pipe onto the ground. The driver, injured in the accident, was unable to get out of his vehicle or call for help. At 0835, the shift supervisor, who had been on top of the tanks in the south tank yard taking tank gauge readings, was the first person to come upon the accident scene. As soon as he saw that oil was on the ground, he immediately radioed the Dock Operator to close the riser valve at the fuel oil dock. The dock operator closed the riser valve as instructed and radioed the barge tankerman to shut down the transfer pumps. The shift supervisor then realized that oil was spilling out of both ends of the open pipeline, so he went to close the valve at the 60,000 barrel storage tank. This was accomplished at 0845 after which some of the oil in the pipeline continued to drain slowly out of the pipeline for a few minutes. Because the injured truck driver needed attention, the shift supervisor called 911 to get assistance from the Portland Fire Department. The Inspection Operator climbed into the truck and turned off the ignition and offered first aid to the truck driver.

During the 15 minutes before the valves were closed a total of about 900 barrels of oil were pumped from the pipeline, which was carrying oil at the rate of 3500 barrels per hour at the time of the accident. After isolating the pipeline, an additional 100 barrels drained out by gravity. Of the 1,000 barrels of oil spilled from the pipeline, approximately 857 barrels ran down the river bank and into the river. The rest was trapped in puddles in low spots around the accident site.

The shift supervisor assessed the spill conditions, and noted the following information on the Oil Spill Report Form, which he took from the Oil Spill Plan Field Manual, located in the boiler control room:

Spill Location at the Facility:	Fuel oil dock.
Type of Oil Spill:	No. 6 Fuel Oil.
Cause of Spill:	Pipeline rupture (vehicle accident).
Amount of oil spilled:	850 barrels (estimated).
Date of Spill:	May 26, 1994.
Time of Spill:	0830 (approximately).
Extent of Injuries, if any:	Truck driver, unconscious.
Damage on-site:	Damaged Pipeline Oil spilled on ground and onto waterway.
Damage off-site:	None yet.

Corrective Actions Taken: Discharge stopped
First aid requested.

At 0850, the shift supervisor initiated the notification procedures by following the Call Out Checklist in the Field Manual and contacting, in the following order, the facility manager (QI) (who was reached at his office in Seattle), the Primary Response Contractor (PRC), and the gate guard, and giving each of them the information about the oil spill.

Upon receiving the information about the spill from the shift supervisor (at 0855), the facility manager immediately telephoned the alternate QI, and relayed the information about the spill (including the information that the estimated amount of oil spilled was about 1000 barrels of No. 6 fuel oil and that the spilled oil was not yet contained) and asked the alternate QI to make the required government notifications, including the local USCG. This involved telephoning and relating the circumstances of the spill five (5) times. The agency notifications took approximately 25 minutes.. The alternate QI then telephoned the others on the Call Out Checklist to have the others who would fulfill the other incident command system roles stand-by in case they might be needed.

In his call to the PRC, the shift supervisor requested that the PRC respond immediately with all available personnel and equipment to contain the spilled oil in the area of the fuel oil dock. Foss began mobilizing two response boats and 2,000 feet of containment boom on trailers. At 0900, the On-duty Pulp Mill Shift Coordinator then proceeded to the spill site to see first hand the spilled oil and to assume the position of Incident Commander and Alternate Qualified Individual until the Qualified Individual might arrive.

The shift supervisor used the hydrogen sulfide monitor to verify that there was no health hazard in breathing vapors from the spilled oil. The air monitor indicated that there was no detectable level of hydrogen sulfide in the air. The shift supervisor specified that all personnel involved in the spill response must wear protective clothing including hard hats, rubber boots, rubber gloves, rain coat and coveralls, and USCG approved floatation devices.

After retrieving (from the warehouse), and dressing in, the required PPE, the shift supervisor launched the spill response boat from the dock service platform. He then climbed down the dock ladder to the boat, started the motor, motored to the boom storage area, and retrieved the towing line for the containment boom. Meanwhile, the dock operator had proceeded to the oil containment boom storage box and when the shift supervisor arrived in the boat, the dock operator assisted the shift supervisor in launching the boom.

When the boom was pulled out of the storage box, it was towed around the barge and the dock by the shift supervisor in the boat. At the upstream shoreline, the shift supervisor passed the towing line to the dock operator on shore, who pulled the end of the boom onto the river bank and tied the end of the boom off to a large driftwood log. This action was successful at encircling all of the spilled oil which had cooled upon entering the water and thereby had become very viscous and only spread slowly on the water surface. The viscosity of the fuel oil which was approximately 500 centistokes at 120 degrees Fahrenheit (the pumping temperature) became over 50,000 centistokes at the water temperature of 45 degrees Fahrenheit! Containment was accomplished at 1100. This action completed containment of the spill at 0930.

The PRC and the local USCG representatives all arrived at approximately 1000. The shift supervisor briefed them on the nature and extent of the spill and the status of the response. It was agreed that the PRC would proceed with deployment of a disc skimmer to recover oil from the surface of the water inside the containment boom. In addition, oleophilic snares would be

used to pick up the heavy tar-like oil in areas where the skimmer could not reach or operate. The skimmer would be tended by four vacuum trucks which would directly provide 400 barrels of interim storage capacity for recovered oil and water. By operating the vacuum trucks in a fashion in which one was being loaded while one was being unloaded and two were in transit to and from the spill site, the effective interim storage capacity of the four vacuum trucks was magnified by a factor of at least 6, assuming each round trip to be approximately 4 hours.

Also, two 500 foot sections of boom would be deployed in the river downstream of the facility to deflect any oil that may escape containment toward the shoreline. This would prevent the spilled oil from spreading into the main channel of the river.

For the oil spilled on the shoreline, it was decided to suck up as much as possible with a vacuum truck. If the oil was too viscous to be sucked up, it would be shoveled up and placed in drums for later disposal. It was decided by the USCG and the ODEQ representatives that a Unified Command was not required. It was also agreed that communication between the QI and the PRC could be managed verbally or with facility radios, one each given to the QI, the Pulp Mill Shift Coordinator and the PRC supervisor. The PRC furnished radios for his crew. It was agreed that communication between the QI and the agencies would be face to face, as required. Finally, it was decided that personnel and equipment could be deployed from the sites at the facility.

The PRC deployed the boat with two people in it to hook up the Skim-Pak skimmer. The vacuum truck was parked at the shore. The vacuum truck driver operated the vacuum truck. One man was assigned the task of operating the Skim-Pak skimmer. Once the Skim-Pak skimmer was in operation (at 1145), two people in a second boat spread snares in out of the way places to collect the floating oil. As the snares became saturated with oil they were individually retrieved with a pike pole and placed into plastic bags in the boat. When full, the plastic bags were manually moved onshore and carried by hand to a stock pile area located on nearby paved areas where two layers of 10 mill plastic were spread out as a secondary containment area. The edges of the plastic were laid over hay bales furnished by the PRC.

The damage to the pipeline was extensive. The barge could not be unloaded until the pipeline was repaired. It was estimated that the pipeline repair would take at least two days, so the barge was sent to another facility for unloading.

After the free liquid oil on the ground was sucked up into the vacuum trucks, the PRC began to use a front end loader to scrape up oil soaked soil which was placed in the secondary containment area.

With the recovery operation underway, the agency representatives departed at 1400 with the plan to return the following day to check on the progress of the recovery and clean-up.

By 2045, the Skim-Pak skimmer had collected an estimated 772 barrels of oil from the water surface. In addition, 1,000 snares had been spread and recovered with approximately 15 barrels of oil and water. At this point it was decided that absorbent sweeps would be placed in the water along the boom and shoreline and tied to the dock pilings to absorb floating oil as the tide moved the water up and down over night.

At the end of the day, the recovered oil product in the vacuum truck was taken to the oil storage tank and discharged into the aboveground storage tank.

During the day, the QI had telephoned the assistant environmental manager, the person fulfilling the ICS Planning role, to prepare a disposal plan for the oil soaked snares and soil.

A relief dock operator remained on-site overnight to monitor the floating booms and absorbent sweeps.

SECOND DAY

During the next day, the PRC disconnected the Skim-Pak skimmer equipment, retrieved the soaked absorbent sweeps, and laid new sweeps in the area to pick up any oil that may float off of the dock piling as the tide washed water up and down over them.

The facility ICS Planning person prepared a disposal plan in which the debris was determined to be a "non-dangerous" waste. The oil soaked snares would be manually wrung out by the PRC. Free liquid oil and water wrung from the snares would be processed through a portable oil/water separator from which the oil would be recycled into the facility fuel oil tank and the water (with oil concentration below 10 mg/l) processed through the facility process water system. The snares and the sweeps would then be rebagged and transported to a commercial incinerator for energy recovery. The oil soaked soil would be transported in lined trucks to an authorized soil incinerator to be burned for energy recovery.

A mechanical contractor was called to repair the oil pipeline by cutting out the damaged section and welding in a replacement pipe This was accomplished on the second day.

THIRD DAY

The sweeps were changed once more in the morning, but by the afternoon only unrecoverable sheen remained inside the containment boom. With the permission of the USCG and the ODEQ, it was decided to leave the containment boom in-place along the rip rap shoreline and to change out sweeps everyday or as needed. The response boat and other equipment were removed from the water and transported in a lined truck to the PRC's facility for decontamination. The repaired pipeline was hydrostatically tested and the damaged steam tracing and insulation were repaired. The oil supplier was contacted to reschedule the fuel oil delivery.

Sweeps were changed out daily for the first week and then weekly for the next three weeks after which no sheen remained and the containment boom was removed from the water and returned to the PRC.

The solid wastes were processed and transported for recycle and disposal. Finally, the solid debris secondary containment was removed and disposed of as normal trash.

In the fourth week after the spill, the Facility Manager held a post-spill incident review meeting. Overall, an estimated 93% of the oil spilled into the water was recovered and recycled. The recovery was high because containment was accomplished quickly and completely. No recommendations for changes in the spill plan were made.

WORST CASE SPILL (80,000 BARRELS) SCENARIO

FIRST DAY OF SPILL

All three of the aboveground storage tanks in the north tank yard at the PNO Portland facility were filled to capacity, holding a combined total of 140,000 barrels. At one minute after midnight on May 31, 1994, the foundation of the 60,000 barrel oil tank settled causing a crack in the side of the tank. The oil flowed out with such force that the wave knocked down part of the secondary containment dike and buckled the side of the other 60,000 barrel oil storage tank after which the floor-to-shell welded seam of the second tank failed. All 140,000 barrels of oil stored in the two tanks began to drain into the secondary containment area. 80,000 barrels of the spilled oil would eventually flow through the break in the secondary containment wall and into the Willamette River.

At 0002, the on-duty shift supervisor, who had been inside of the boiler control room arrived at the edge of the north tank yard to observe the accident scene. He returned to the boiler control room and initiated the Facility Oil Spill Response Plan by recording the following information on the Oil Spill Report Form in the Spill Plan Field Manual:

Spill Location at the Facility:	North Tank Yard
Type of Oil Spill:	No. 6 Fuel Oil.
Cause of Spill:	Tank rupture.
Amount of oil spilled:	As yet unknown but very significant amount.
Date of Spill:	May 31, 1994.
Time of Spill:	0001 hr.
Extent of Injuries, if any:	None.
Damage on-site:	Damaged Storage Tanks (2). Oil spilled on ground and into Willamette River.
Damage off-site:	As yet unknown.
Corrective Actions Taken:	None yet.

The shift supervisor next initiated the notification procedures by following the Call Out Checklist in the Field Manual and contacting, in the following order, the facility manager (QI) (who was reached at his office in Seattle), the Primary Response Contractor (PRC), and the gate guard, and giving each of them the information about the oil spill.

Upon receiving the information about the spill from the shift supervisor (at 0010), the facility manager immediately telephoned the alternate QI, and relayed the information about the spill (including the information that an unknown amount of No. 6 fuel oil was spilled and that the spilled oil was not yet contained) and asked the alternate QI to make the required government notifications, including the local USCG. This involved telephoning and relating the circumstances of the spill five (5) times. The agency notifications took approximately 25 minutes.. The alternate QI then telephoned the others on the Call Out Checklist to have the others who would fulfill the other incident command system roles stand-by in case they might be needed.

In his call to the PRC, the shift supervisor requested that the PRC respond immediately with all available personnel and equipment to contain the a significant spill of No. 6 fuel oil in the Willamette River. Foss began mobilizing two response boats (each with 1000 feet of containment boom) and 2,000 feet of containment boom on trailers.

The shift supervisor used the hydrogen sulfide monitor to verify that there was no health hazard in breathing vapors from the spilled oil. The air monitor indicated that there was no detectable

level of hydrogen sulfide in the air. The shift supervisor specified that all personnel involved in the spill response must wear protective clothing including hard hats, rubber boots, rubber gloves, rain coat and coveralls, and USCG approved floatation devices.

After retrieving (from the warehouse), and dressing in, the required PPE, the shift supervisor launched the spill response boat from the dock service platform. He then climbed down the dock ladder to the boat, started the motor, motored to the boom storage area, and retrieved the towing line for the containment boom. Meanwhile, the dock operator had proceeded to the oil containment boom storage box and when the shift supervisor arrived in the boat, the dock operator assisted the shift supervisor in launching the boom.

When the boom was pulled out of the storage box, it was towed around the dock by the shift supervisor in the boat. At the upstream shoreline, the shift supervisor passed the towing line to the dock operator on shore, who pulled the end of the boom onto the river bank and tied the end of the boom off to a large driftwood log. This action was successful at encircling much of the spilled oil which had cooled upon entering the water and thereby had become very viscous and only spread slowly on the water surface. The viscosity of the fuel oil which was approximately 500 centistokes at 120 degrees Fahrenheit (the pumping temperature) became over 50,000 centistokes at the water temperature of 45 degrees Fahrenheit! Containment was accomplished at 1100. This action was completed at 0200.

The PRC and the local USCG representatives all arrived at approximately 0200 AM. The shift supervisor briefed them on the nature and extent of the spill and the status of the response.

The shift supervisor immediately authorized funds to allow the PRC to proceed with initial spill response.

The PRC began deploying response boats and the 4,000 feet of containment boom as it arrived at the site on trailers and on fast response boats. 1,000 feet of containment boom laid in the river along the facility shoreline encircled the largest amount of the cooling oil along the river bank. A doubled diversion boom was placed in position at an angle out into the Willamette River. This action was successful at intercepting most of the spilled oil because the outer edge of the spreading oil had cooled upon entering the water and thereby had become very viscous. This retarded the overall spreading of much of the hot (120 degrees Fahrenheit) oil which pooled up behind the outer viscous edge. The viscosity of the fuel oil which was approximately 500 centistokes at 120 degrees Fahrenheit (the storage temperature) became over 50,000 centistokes at the water temperature of 45 degrees Fahrenheit. Upriver a pair of containment booms were installed out from the river bank upstream of the furthest extent of the spilled oil to stop the expected spread of the oil when the tide shifted in a few hours. This work accomplished containment within the river and was completed at 0500.

When the QI arrived on-scene (at 0400), he immediately met with the Incident Commander (shift supervisor) and the USCG whom had previously arrived on the scene.

The Incident Commander had inspected the accident scene and found both tanks sufficiently damaged to have lost their entire contents which the shift supervisor confirmed to have been 140,000 barrels. Based on the depth of oil in the secondary containment area, it was estimated that 80,000 barrels had spilled into the river

Having received the briefing, the QI announced that he was assuming command of the spill response (0410). The QI decided that the spill response command post would be temporarily at the spill site, but would be moved to the facility main office conference room at sunrise. He also asked the shift supervisor to have the alternate QI call in the rest of the response team that

had previously been asked to stand-by. The first duty of the ICS logistics manager would be to make the main office conference room ready to become the central command post. Until the central command post was ready, the main communications post would continue to be the boiler control room. The Safety Officer was directed by the QI to immediately prepare a Site Health and Safety Plan for the spill response.

Having seen the extent of the oil spilled, the US Coast Guard representative, acting as the Federal On-scene Coordinator (FOSC), called for the creation of a Unified Command (UC) involving the QI (or facility On-Scene Coordinator (OSC)), the State On-scene Coordinator (SOSC), and the FOSC. The UC would oversee management of the spill response and to be sure that the facility had sufficient resources to respond to the spill. The FOSC immediately called a UC meeting to:

- Review and establish response objectives,
- Initiate the ICS planning cycle to direct the spill response operations,
- Direct that initial response efforts be focused on spill containment,
- Establish communication procedures, and
- Involve NOAA in spill surveillance and trajectory forecasting.

At 0500, the UC held it's first formal ICS planning meeting. The first objective was spill containment and the diversion of oil from sensitive areas. The Planning manager was directed to devise a booming priority using surveillance information, trajectory forecasts, guidance from the Geographical Response Plan, and guidance from the SOSC and other state representatives who may arrive on the scene.

The UC determined that the response would be organized into two 12-hour shifts each day (one beginning at 0700 and the other beginning at 1900) and that the work would proceed around the clock until further notice (expected to be a few days). During each working shift, the UC would develop an action plan to be used to direct the work of the following shift. Each written action plan would be formulated at a 30 minute planning meeting of the UC, the ICS team members, and the PRC's to be held at 0500 and 1700 hours each day. Each planning meeting would include an update on the progress of the spill response and the personnel, material, and equipment in use, a review of the updated maps and charts, a review of current problem areas needing additional personnel or equipment, and formulation of an action plan to be carried out by the next shift.

The USCG contacted NOAA to arrange surveillance flights with the first one to be as early as possible to identify the size, appearance, and behavior of the oil on the water.

At 0800, NOAA reported that the oil slick extended about 6 miles downstream of the facility and covered an area of approximately 1 mile long by 0.2 miles wide. The slick consisted of thick black oil surrounded by sheen. Very little emulsification was evident. No shoreline contamination in the river was evident yet.

NOAA also reported the current weather/climate conditions as follows:

Temperature:	40 degrees Fahrenheit.
Wind Speed:	9 mph.
Wind Direction:	Southwest.
Conditions:	Overcast, light rain.

The hydrographic conditions were forecast as follows:

Date	First High Tide (Time/Height)	First Low Tide (Time/Height)	Second High Tide (Time/Height)	Second Low Tide (Time/Height)
May 31, 1994	12:16/11.5	6:56/3.8	12:20/7.8	6:14/2.9
June 1, 1994	12:57/11.6	7:49/2.4	1:47/8.3	7:19/3.8
June 2, 1994	1:38/11.6	8:37/0.9	305/9.2	8:24/4.6

Based on weather forecasts and tidal current computer models, NOAA estimated oil movement during the first 72 hours of the spill were as follows:

The stage of the river was +15 feet CRD. At this level, the river flow would be affected by tidal action. The predominant force moving the oil on the water was expected to be the river current which was expected to vary in the main channel of the rivers from 0 knots to 2 knots depending on the tide cycle. Over the first 72 hours, the wind was expected to blow steadily at between 10 to 15 mph from the southwest direction. This meant that the oil would be carried by the current downriver where it would be expected to make the heavy impacts on environmentally sensitive areas and private property

Also, every effort would be made to protect areas in accordance with the priorities of the GRP of the ACP. The decision was made to deploy diversion booms to protect the strategic areas outlined in the ODEQ maps in the Spill Plan, including the entrance to the Multnomah Channel and the Columbia Slough at Rivergate.

The first floating (Marco-type) skimmers on-scene worked in the main channel of the Willamette River with the goal of preventing free floating oil from reaching shorelines, especially along the shoreline in the area of the Multnomah Channel. Meanwhile, 120 barrel vacuum trucks were used to skim oil directly from the top of the water along the river shore of the facility.

All requests by the press were to be referred to the Public Relations manager who was asked to attend all future ICS briefings and planning meetings, set up a location for press personnel, contact the local TV and radio stations, and invite the press to twice daily press briefings.

By 1700, ail boom had been deployed to protect the entrance to the Multnomah channel on the west side of Sauvies Island. The USCG stopped all vessel traffic in and out of the Port of Portland and the Willamette River until containment could be achieved.

In the evening of the first day, television news programs showed aerial pictures of the damaged tanks and spilled oil on water and on beaches along with video tape of several dead birds covered with oil. Reports highlighted fast response actions and cooperation between federal, state and facility representatives. Interviews featured the FOSC (USCG), and the PNO Public Relations Manager for the spill, who expressed that PNO acknowledged ail responsibility for the spill, was working hard to contain the spilled oil and limit damages to private property and the environment, and was committed to following through until the clean-up was accomplished. Finally, the reporter announced that anyone wishing to volunteer to help could contact the Oregon Department of Fish and Wildlife. But, any volunteer must receive training before he/she could be allowed to help with any clean-up effort.

THE SECOND DAY

The morning NOAA surveillance flight indicated that most of the oil was pushed against the river shoreline by wind overnight. Only unrecoverable sheen remained in the main body of Columbia River. Response boats working in pairs trolling with oil booms were successful in corralling significant amounts of free floating oil in near-shore areas where recovery was more likely. Collected oil was being removed by vacuuming from several sacrificial beaches along the rivers and sloughs.

Near shore where oil was contained inside booms, disc skimmers and rope mops were used to collect free floating oil. Oily debris was manually picked from the water and placed in plastic bags by two-man crews working in small boats with outboard motors. Also, vacuum trucks successfully pumped floating oil from the waters edge where wind concentrated the oil up against the shoreline. Flat bottom boats were used to gain access to mud flats. Low pressure flushing was attempted at selected sites to wash oil from vegetation, but most of the oil remained on vegetation.

Manual on-shore cleanup operations commenced. Attention was drawn to the sensitivity of the shoreline to physical disturbance by clean-up activities. Oil was manually shoveled up on sandy shorelines into the buckets of front end loading equipment which were dumped into plastic lined trucks for transport back to the facility to interim storage areas which had been created with a double thickness of 10 mill plastic sheeting.

Interim storage proved to be adequate with use of Baker tanks installed at the facility, vacuum trucks for transport from the field skimmers to the Baker tanks and to two barges furnished by the PRC which were moored at Port of Portland.

Disposal plans were worked out consistent with the ODEQ requirements. Recovered oil and water would be recycled by processing at Spencer Environmental. Oily debris would be bumed for energy recovery, if possible. Otherwise, oily debris would be landfilled.

THE THIRD DAY

Clean-up progressed well with most of the bulk oil removed from the water surface and beach clean-up actively underway all along western shoreline of the Willamette River and the western shoreline of the Columbia River down as far as St. Helens.

With the spilled oil accumulated along the river shorelines, containment booms were stretched off shore outside the highest concentrations of the oil to complete containment against the shoreline. When this work was completed, response efforts shifted exclusively to near shore and on-shore clean-up. The diversion booms across river channels were removed and the USCG reopened the port to vessel traffic. Vessel speeds were restricted to reduce wave action.

Meanwhile, in the river at the facility, skimmers and vacuum tmcks worked to recover a large percentage of the contained oil.

Shoreline clean-up efforts along the lower Willamette River and the Columbia River down to St. Helens continued for 3 weeks before the USCG and the WDOE approved cessafion of all operations and the removal and decontamination of all equipment.

Storage tank design and reconstmction work was begun and alternatives were explored for storing fuel oil during the repair period.

60 days after the spill, the Facility Manager held a post spill review meeting involving all of the major spill participants including the QI, the PRC, the USCG, and the WDOE representatives. Many lessons were learned but no changes in the spill plan were recommended.

Overall it was estimated that 41,600 barrels (52%) of the spilled oil was contained inside the initial containment boom. Of this, an estimated 37,440 barrels (90%) was recovered on the water and on the shoreline. Ten percent was lost to natural dissipation. Of the 38,400 barrels that entered Commencement Bay, 34,560 barrels (90%) was recovered on the water or on the shoreline and 10% was lost.

APPENDIX G

GLOSSARY

APPENDIX G

GLOSSARY

ACRONYMS

ACP	Area Contingency Plan covering the response to oil spills in Puget Sound.
CFR	Code of Federal Regulations
EMD	Washington State Emergency Management Division receives reports of all spills into the waters of the state.
EPA	Environmental Protection Agency
ERAP	Emergency Response Action Plan (or Field Manual)
FOSC	Federal On-scene Coordinator
GRP	Geographic Response Plan portion of the Northwest ACP
IC	Incident Commander
ICS	Incident Command System is an organizational stmcture for response emergencies built on teamwork and coordination.
LEPC	Local Emergency Planning Committee
MSDS	Material Safety Data Sheet presents informafion about chemical and physical properties, health hazards, safe handling and storage procedures, and emergency procedures for industrial chemicals.
NCP	National Contingency Plan codified in 40 CFR 300.
HOAA	National Oceanographic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRC	National Response Center operated by the USCG receives reports of all pollutant spills into navigable waters.
NVIC	Navigation and Vessel Inspection Circular published by US Coast Guard. NVIC 7-92 presents guidance for oil facility spill response plans.
OPA 90	Oil Pollution Act of 1990 amends the Federal Water Pollufion Control Act with specific requirements for facility oil spill response plans.
OSC	On-Scene Coordinator is the person responsible for the spill response activities of a responsible party or govemment agency or group of agencies.
OSHA	Occupational Safety and Health Act (Federal)
PNO	Pacific Northern Oil, facility operator
PTSI	Pacific Terminal Services, Inc., facility operator
PPE	Personal Protective Equipment (i.e. gloves, coveralls, glasses, boots, etc.)
PRC	Primary Response Contractor
QI	Qualified Individual defined by federal regulafions.
RCW	Revised Code of Washington, state statutes.
SOSC	State On-scene Coordinator

UC	Unified Command
USCG	United States Coast Guard.
WAC	Washington Administrative Code, state regulations.
WDOE	Washington Department of Ecology.
WISHA	Washington Industrial Safety and Health Act of 1973

DEFINITIONS

BARREL: equivalent to 42 gallons.

CLEANUP: for the purposes of this document, cleanup refers to the removal and/or treatment of oil, and/or spill wastes of contaminated materials generated by the incident. Cleanup includes restoration of the site and its natural resources.

COASTAL WATERS: those state waters falling under the jurisdiction of the U.S. Coast Guard.

CONTINGENCY PLAN: a document used by (1) federal, state and local agencies, to guide their planning and response procedures regarding spills of oil, hazardous substance or other emergencies; (2) a document used by industry as a response plan to spills of oil, hazardous substances, or other emergencies occurring upon their vessels or at their facilities.

DECONTAMINATION: removal of oil from personnel and their equipment necessary to prevent adverse health effects.

DISCHARGE: any spilling, leaking, pumping, pouring, emitting, emptying, or dumping.

EFFECTIVE DAILY RECOVERY: recovery equipment nameplate capacity multiplied by a recovery efficiency factor.

EMERGENCY (WDOE VERSION): the actual or potential spillage, discharge, or other loss of product or waste into the environment which represents an actual or potentially imminent threat to public health and safety or the environment, or where prompt cleanup action including physical investigafion would result in a great savings to the citizens of Washington State.

EMERGENCY RESPONSE PHASE, EMERGENCY PHASE: the portion of a spill response where the primary concem is the alleviation of the immediate danger to human life, heath safety, or property by stabilizing the real or threatened releases.

FACILITY: for purposes of this document, facility means the marine oil transfer facility and associated pipeline, storage tanks, unloading dock and equipment used to transfer or handle oil in bulk to or from a vessel.

INCIDENT COMMANDER: a facility employee in charge of emergency response actions during an oil spill to land or water, designated by the facility owner or operator and identified in the facility oil spill contingency plan.

INTERIM STORAGE: a site used to temporarily store recovered oil or oily waste unfil the recovered oil or oily waste is permanently disposed. Interim storage may include tank trucks, portable tanks, or tank barges.

NAVIGABLE WATERS OF THE STATE: waters of the state, and their adjoining shorelines, that are subject to the ebb and flow of the tide and/or are presently used, have been used in the past, or may be susceptible for use to transport intrastate, interstate, or foreign commerce.

OIL OR OILS: naturally occurring liquid hydrocarbons at atmospheric temperature and pressure coming from the earth, including condensate and natural gasoline, and any fractionation thereof, including but not limited to, cmde oil, petroleum gasoline, fuel oil, diesel oil, oil sludge, oil refuse, and oil mixed with wastes other than dredged spoil.

Oil does not include any substance listed in Table 302.4 of 40 CFR Part 302 adopted August 14, 1989, under section 101(4) of the federal Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by Public Law 99-499.

OILY WASTE: oil contaminated waste resulting from an oil spill or oil spill response operations.

ONSHORE FACILITY: any facility, located in, on, or under any land of the state, other than submerged land, that, because of its location, could reasonably by expected to cause substantial harm to the environment by discharging oil into or on the navigable water of the state or adjoining shorelines.

OWNER OR OPERATOR: (I) in the case of a vessel, and person owning, operating, or chartering by demise, the vessel, (ii) in the case of an onshore facility, any person owning or operating the facility; and (iii) in the case of an abandoned vessel or onshore facility, the person who owned or operated the vessel or facility immediately before its abandonment. *NOTE: "Operator" does not include any person who owns land underlying a facility if the person is not involved in the facility's operations.*

PERSON: any political subdivision, government agency, municipality, industry, public or private corporation, copartnership, association, tirm, individual, or any other entity whatsoever.

POST EMERGENCY RESPONSE: the portion of a response performed after the immediate threat of a release has been stabilized or eliminated and cleanup of the site(s) has begun.

PRIMARY RESPONSE CONTRACTOR OR CONTRACTORS: an individual, company, or cooperative that has contracted directiy with the plan holder to provide equipment and/or personnel to the containment or cleanup of spilled oil. For use in contingency plans, Primary Response Contractors must be approved by WDOE.

QUALIFIED INDIVIDUAL: representative of an oil facility who is familiar with the facility oil spill response plan, with written authority to activate spill response contracts, act as liaison with government agency representatives and obligate funds for response activities.

RESPONSE TEAM: facility employees designated as members of the spill response team by the facility owner or operator in the facility oil spill contingency plan.

SPILL RESPONSE PERSONNEL: federal, state or local agency and facility or contract personnel responsible for participating in or otherwise involved in spill response.

SPILL: an unauthorized discharge of oil into the waters of the state.

STABILIZED SITE: a site where the immediate dangers have been eliminated; a condition in which a contaminant is no longer migrating off site; the source has been identitied, the release has been stopped and the released material has been contained; no further immediate hazards exist; public and environmental health is not at risk or acute exposure.

UNIFIED COMMAND: the method by which local, state and federal agencies and industry (or responsible party) will work with the incident commander to:

- determine their roles and responsibilities for a given incident
- determine their overall objectives for management of and incident
- select a strategy to achieve agreed upon objectives
- deploy resources to achieve agreed upon objectives

WATERS OF THE STATE: includes lakes, rivers, ponds, streams, inland waters, underground water, salt water, estuaries, tidal flats, beaches and lands adjoining the seacoast of the state, sewers, and all other waters and watercourses within the jurisdiction of the state of Washington.

WORST CASE SPILL or DISCHARGE: the largest foreseeable spill in adverse weather conditions. EPA, USCG, and WDOE have different definitions for worst case spill or discharge planning volumes.

UNITS

BPH/BPD	Barrels per hour/Barrels per day
CST	fluid viscosity measured in centistokes
CY	Cubic Yards

PACIFIC TERMINAL SERVICES, INC.

OIL SPILL CONTINGENCY PLAN

MARINE FUEL OIL FACILITY

7900 NW ST. HELENS ROAD
PORTLAND, OREGON 97210

FIELD MANUAL

APPENDIX H

FIELD MANUAL
(Emergency Response Action Plan)

PURPOSE

This Field Manual is part of the Portland Facility Oil Spill Contingency Plan. The purpose of this Field Manual is to summarize key action elements and notification requirements for easy reference and use on-site in case of an oil spill at the facility. (The Field Manual is intended to meet the EPA requirement for an Emergency Response Action Plan.)

CONTENTS

The Field Manual is composed of the following excerpted sections of the facility Oil Spill Contingency Plan:

- Emergency Call-Out list of key PTSI personnel, PRC and Govt. Agencies
- Oil Spill Response Operations Checklist
- Oil Spill Report Form
- On Site Oil Spill Response Equipment

*Refer to Sections 2.0 and 3.0 for specific response, containment, cleanup and disposal procedures

2.4 NOTIFICATION

ALL SPILLS REQUIRE REPORTING

2.4.1 Call-Out Checklist

After a spill, the on-duty shift supervisor will immediately call:

911 IN CASE OF INJURY, FIRE OR EXPLOSION.

After shutting off all pumps, closing all valves, and assessing details of the spill listed on the Oil Spill Report Form, the on-duty shift supervisor will call the following people:

1. Facility Manager:

Title	Name	Office	Pager	Mobile	Home
Tenninal Manager/QI	Troy Goodman	253-272-9348		206-571-5483	425-427-5660
Alt QI	George Clark	206-628-0051	88-983-9087	206-793-4358	425-672-9080
Alt QI	Jack Wild	503-240-3456		206-255-5010	360-263-5330
Alt QI	Tina Garrett	503-240-3452		503-572-9355	503-283-6841

If spill involves Koppers Industries Portland Coal Tar Pitch Pipeline then notify:
Manager TJ Turner 503-286-3681

2. Primary Response Contractor(s):

Clean Rivers Cooperative: (503) 220-2040

3. NWNG, Security (at facility gate): (503) 286-5250

Immediately, upon receiving the call and details about the spill, the QI, or the designated altemate QI, will call the following:

1. USCG National Response Center (NRC) at: 1-800-424-8802 or (202)-267-2675.

2. Oregon Emergency Response System (OERS) at: 1-800-452-0311 or (503)-378-6377.

3. Local USCG Marine Safety Office at: (503) 240-9301.

4. Northwest Natural Gas Company:
   Sandi Hart at Office: ext. 4322 (503) 226-4211
   or distribution dispatch night supervisor: (503) 226-4211

5. Corp. of Engineers:
   Corp. of Engineers Office: (503) 221-4188
   Bill Switzenberg, Shipyard Chief Office: (503) 326-5636
   Brandon Smith, Envir. Coord Office: (503) 326-2477

6. Portland Fire Department: 911
7. Police and State Patrol 911
8. Hospital and Evacuation Notice 911

9. EPA Region X (206) 553-1263

If there is no answer at any of these numbers, call the next number, and after 5 minutes, try calling the unanswered number again.

FIGURE 2-3

OIL SPILL RESPONSE OPERATIONS CHECKLIST

Emergency Action Steps

- ☐ Stop the flow of oil
  - ☐ Notify barge crew to shutdown pumps.
  - ☐ Close pipeline valves.
- ☐ Shut off all ignition sources.
- ☐ Check for injuries, get help, and offer first aid, if necessary.
- ☐ Check for fire or explosion, warn other, get help, evacuate area or fight fire.
- ☐ Contain spill, if possible:
  - ☐ Deploy containment boom.
  - ☐ Monitor air for H2S and use proper PPE.
  - ☐ Empty leaking tank.
  - ☐ Isolate and/or evacuate leaking pipeline.
  - ☐ Divert or dam spill on ground.
- ☐ Call out Primary Response Contractor(s).
- ☐ Notify facility Spill Response Team on Mill Call Out List.
- ☐ Notify government agencies.
- ☐ Establish ICS to manage spill response operations.
- ☐ Authorize Funds for spill response.

Assessment and Response Planning:

- ☐ Implement ICS planning cycle.
- ☐ Assess health and safety hazards, prepare Health and Safety Plan
- ☐ Conduct air monitoring.
- ☐ Assess nature and extent of spill.
- ☐ Survey and predict spill movements.
- ☐ Identify and prioritize environmentally sensitive areas.
- ☐ Develop booming strategy.
- ☐ Identify response equipment and personnel needs.

Containment and Environmental Protection:

- ☐ Locate sufficient boom and deployment equipment and labor.
- ☐ Mobilize and deploy containment boom according to booming strategy.
- ☐ Divert oil from sensitive areas.
- ☐ Rescue wildlife.

Recovery:

- ☐ Locate sufficient skimming equipment, sorbent materials, and deployment equipment and labor.
- ☐ Mobilize and deploy skimmers/sorbents on water.
- ☐ Mobilize and deploy shoreline clean-up labor and equipment.
- ☐ Mobilize and deploy interim storage to support recovery operations.

Disposal:

- ☐ Develop disposal plan with government agencies.
- ☐ Obtain permits, as required.
- ☐ Recycle oil/water as much as possible.
- ☐ Dispose of oily debris and soil.

Post Spill Activities:

- ☐ Assess natural resource damages.
- ☐ Restore wildlife habitat.
- ☐ Conduct post spill review.
- ☐ Revise Oil Spill Response Plan, if necessary.

FIGURE 2-4
OIL SPILL REPORT FORM

Portland address: Pacific Terminal Service, Inc. – 7900 St. Helens Rd. Portland OR 97219
Telephone: (503) 286-9621 or (503) 286-5321 Fax: (503) 286-9794

On-Duty Shift Supervisor: _____

On-Duty Dock Operator: _____

Party Responsible for Spill (if known): _____

Time/Date of Spill: _____
Location of Spill: _____
Quantity Spilled: _____ barrels or gallons
Type of Oil Spilled: _____ (e.g., Bunker, Diesel)

Actions Taken? _____

Discharge Stopped or Contained? _____

Cause of Spill (if known): _____

Potential Environmental Damage: _____

Who has been notified? _____

☐	"911" IN CASE OF INJURY, FIRE OR EXPLOSION	
☐	Facility Manager	206-938-6500
☐	Primary Response Contractor: CRC	503-220-2040
☐	NWG Security	503-286-5250
☐	USCG National Response Center	800-424-8802
☐	Oregon Emergency Management	800-452-0311
☐	EPA Region X	206-553-1263
☐	USCG Marine Safety Office	503-240-9379
☐	PTS, Inc. Spill Response Manager	206-628-0051
☐	NWNG	503-226-4211
☐	US Corp of Engineers	503-326-2479

Spill Category

☐	Minor	Less than 100 gallons or	2.4 barrels
☐	Medium	100 to 10,000 gallons or	240 barrels
☐	Major	10,000 to 1,000,000 gallons or	24,000 barrels
☐	Catastrophic	More than 1,000,000	

Initial notiflcation should **not** be delayed pending collection of all information

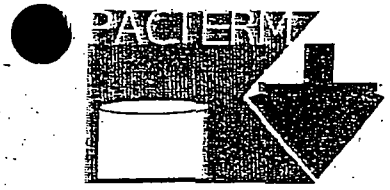


TABLE 3

ON-SITE OIL SPILL RESPONSE EQUIPMENT LIST

(Phase I (1st Hour) Emergency Response and Average Most Probable Discharge)

TYPE	QTY	MAKE	MODEL	AGE	LOCATION	STATUS	TIME TO DEPLOY	MAINT	COMMENTS
Containment Boom (fl)	500	Barrier	24	2000	Deployed			Note 1	With fittings, Tow bridals and anchors. (see note 2 for design limits)
	700	Kepner	8 x 12	2000	Deployed			Note 1	
	1000	Kepner	8 x 12	2000	Dock	Note 3	Note 4	Note 1	
Work Boat	One	Rozema	19 Ft	2000	Pier-91	Note3	Note 5	Note 1	
Outboard Motors	One	Johnson	115 HP	2000	Boat	Note 3	Note 5	Note 1	
Radios:									
UHF Radios	Eight	Motorola	2 Watts	1988	Control	Daily Use	Note 5	As	With Batteries
Base Unit	One			1988	Room	Daily Use	Note 5	Needed	and Chargers
Sorbent materials:									
Pads (sheets)	200	Varies			Warehouse	Note 3	Note 5		
Sweeps (ft)	200					Note 3	Note 5		
Pom Poms	200					Note 3	Note 5		
Sausage Boom (ft)	50					Note 3	Note 5		
Kitty Litter (bags)	10					Note 3	Note 5		

Notes:

1) Maintained and inspected annually or as needed after use.
2) Boom effectiveness is limited to:
   a) Waves: 1 to 1.5 feet for "chop"
   b) Wind 12 to 15 knots for perpendicular wind.
   c) Current: 1.2 to 1.3 knots for perpendicular current.
3) On Stand-by, dedicated and ready for spill response at facility.
4) Deployed in water at all times.
5) Deployment time less than one hour after spill detection.

APPENDIX I

PACIFIC TERMINAL SERVICES, INC.
PORTLAND FACILITY

Oil Spill Response
Site Health and Safety Plan

1.0 INTRODUCTION

1.1 Purpose

This Health and Safety Plan provides guidance to personnel conducting oil spill response work at the Pacific Terminal Services, Inc. (PTSI) facility at 7900 NW St. Helens Road, Portland, Oregon. This plan discusses potential chemical and physical hazards anticipated on site, and entails control measure to assure individual safety. This health and safety plan applies to facility personnel.

This plan was developed based upon the available information and expected conditions about oil spills at the PTSI facility. Because of the nature of contaminants and circumstances which might be present, it is not possible to address in advance all specific situations which might occur. As new information is identified, it is intended that this Health and Safety Plan will be modified and/or amended.

1.2 Distribution and Approval

All PTSI personnel expected to work on this site will read this Health and Safety Plan and will sign the certification form located at the back of this plan (refer to Section 15.0).

As required by law, the Safety Officer will make available a coy of this Health and Safety Plan to subcontractors hired by PTSI for on-site work. Subcontractors will follow these provisions as minimum recommendations. Due to their unique work activities, more stringent health and safety measures may need to be taken to protect subcontract workers. Subcontractors are responsible for the health and safety of their own employees and for meeting all requirements under applicable State, Federal, and local regulations.

2.0 ASSIGNMENT OF RESPONSIBILITIES

2.1. Assignment of Health and Safety Responsibilities for Oil Spill Response

The designated Safety Officer is responsible for the health and safety of facility oil spill response personnel. The designated Safety Officer at PTSI is:

George Clark	(206) 628-0051	(Office)
	(206) 793-4358	(cell)

2.2 Duties of the Safety Officer

- Develop, coordinate, and implement site Health and Safety Plan.
- Respond to field requests for assistance in Health and Safety.
- Monitor site conditions, as required, so that employees are not exposed to levels which exceed established Permissible Exposure Limits (PEL) for hazardous substances.
- Provide site workers with information and training as required in OAC.
- Monitor site conditions during work activities where hazardous gases may be present.
- Record any variances in site conditions.
- Record any illness, disease, injury, or death to nay person on the site.
- Communicate health and safety requirements to field personnel and subcontractors.
- Inform facility On-scene Coordinator regarding new or unanticipated site conditions.
- Perform safety record keeping.
- Verify that medical monitoring and training has been performed.
- Clarify health and safety requirements if on-site conditions change.

2.3 Duties of site Workers and Field Personnel

- Read and follow the Health and Safety Plan
- Check all personal safety equipment to ensure it is in good working condition prior to entering site.
- Report any accidents/illness, unsafe conditions, any unusual smells such as a rotten egg, sulfur, or chemical smell to the Safety Officer.

3.0 WORK ACTIVITIES

3.1 Proposed Work Activities

The scope of this project covers the following typical work activities:

1. Remove free standing oil by vacuuming, channeling, and/or pumping.
2. Repair (including excavation, if required), fabricate, and replace damaged oil handling equipment.
3. Excavate and remove oil-contaminated soil from the site.
4. Deploy and position floating oil spill containment boom.
5. Operate small outboard motor powered boat in the vicinity of the facility.

4.0 SITE CHARACTERIZATIONS AND HAZARD EVALUATION

The possibility of health and safety hazards due to fire and combustible gas ignition, oxygen deficiency, and airborne toxic substances exists. Skin contact with oil should be avoided because contact may cause dermatitis. Further, repeated contact has been shown to cause skin cancer in laboratory animals.

4.1 Definition of Permissible Exposure Limit (PEL) and Short Term Exposure Limit (STEL)

- PEL is the legal maximum air concentrations of a hazardous chemical that workers may be exposed to on an 8-hour basis under Oregon State law.
- STEL is a 15-minute PEL exposure which should not be exceeded at any time during a work day even if the 8-hour PEL is within the allowable limits.

4.2 Toxicity of Contaminants of Concern

The contaminants, which may affect the health of site workers, are petroleum hydrocarbons. Petroleum hydrocarbons may emit hydrogen sulfide vapors (especially if heated) and may be present in the air as oil mist. Exposure to oil mist and hydrogen sulfide may occur during excavation operations. Direct human contact or inhalation of these materials must be avoided wherever possible, or limited to allowable exposure levels. Summarized below are the toxicological properties of these compounds.

4.3 Petroleum Hydrocarbon

Some of the volatile components of petroleum hydrocarbons which are found in No. 6 Fuel Oil and Diesel Oil have similar health effects. Oil mist and hydrogen sulfide vapors may be released from No. 6 Fuel oil. Vapors may cause irritation of the eyes, nose, and throat. Exposure to high concentrations of oil mist may lead to chemical pneumonia. Skin contact may cause dermatitis. Prolonged skin contact has been shown to cause skin cancer on laboratory animals. Hydrocarbons may cause irritation if splashed in the eyes, and repeated exposure to high vapor concentrations may cause eye damage.

Acute exposure to vapors may cause central nervous system depression and minor reversible effects on other body organs, such as the liver and kidneys. There is no single PEL for petroleum hydrocarbons. The current OROSH permissible exposure limit for hydrogen sulfide is 10 ppm averaged over an eight-hour work shift with a STEL of 15 ppm. The current OROSH permissible exposure limit for oil mist is 5 mg/m^3.

4.4 Evaluation of Exposure Routes

- *Inhalation:* Airborne vapors of oil mist, hydrogen sulfide, or other harmful compounds may be created during excavation activities.

- *Skin* Contact: Protective clothing and washing will be used to prevent skin contact from oil and water.

- *Ingestion:* No eating or other hand-to-mouth contact will be permitted in the exclusion zones. Also, decontamination procedures established in this plan will minimize inadvertent ingestion of contaminants. No food or tobacco will be consumed until thorough decontamination.

4.5 Risk Assessments and Hazard Analysis

Vacuum truck and hand techniques will be used to remove residual free liquid oil from the affected areas. Potential exposure consists of inhalation of hydrocarbon vapors or skin exposure to residual oil. See Section 7.0, Respiratory Protection and Protective Clothing. Physical hazards exist on this site, see Section 4.8, Physical Hazards.

4.6 Physical Hazard Evaluation

Oil spill response and hazardous waste site activities present a number of routine physical hazards, including danger from construction vehicles, noise, tripping and other safety hazards. This is probably the number one safety hazard at on-shore clean-up sites. In order to minimize these hazards, site workers must be alert for danger while moving about the site. Construction activities, which present typical safety hazards, include crane safety, avoidance of underground utilities, trenching and shoring.

5.0 AIR MONITORING

Work practices, which would create a potential risk, include handling oil liquids and/or contaminated soils. Initial site monitoring will be conducted at the discretion of the Safety Officer. Air monitoring will be performed at the beginning of each new site activity (vacuuming, excavation, etc.) or at the onset of changing site conditions of weather.

In the event that a release of volatile materials is suspected during excavation activities, or if any unusual odors or smells are noticed, monitoring shall be conducted to ensure that any potential exposures to volatile components of the soil are below Oregon PELs. If necessary, continuous monitoring with a portable, properiy calibrated, continuous photo ionization analyzer (TIP2 or equivalent) will be conducted by the Safety Officer. The TIP2 is sensitive to compounds with molecular ionization potentials below 10.2 and will therefore indicate the presence of many soil contaminants.

A combustible gas/oxygen/hydrogen sulfide meter will be on-site to determine the presence of combustible levels of gas, hydrogen sulfide, and sufficient oxygen levels in confined spaces. This instrument is zeroed prior to each use in a clean environment. Maintenance is performed as needed.

PEL sampling is conducted using 3M Organic Vapor Monitors placed in the breathing zone of the worker. STEL sampling is conducted by drawing a known volume of breathing zone air through a charcoal tube. Both methods require laboratory analysis for exposure determination. Samples should be analyzed by an AIHA accredited laboratory.

6.0 ACTION LEVELS

6.1 Combustible Gas Monitoring

Reading	Level pf Protection
Greater than 20% LEL	1. Suspend all spark producing activities and 2. Evacuate work area.

6.2 Oxygen Meter Reading

Reading	Level of Protection
>19.5% oxygen	No action necessary
<19.5% oxygen	Use NIOSH approved supplied-air respirator or evacuate personnel from the work area.

6.3 Photo Ionization Detector Reading

TIP reading sustained for more than 1 minute in the breathing zone	Level of Protection
Background to 30 ppm	Use Level D PPE.
30 ppm to 60 ppm	Upgrade to Level C (readings must be continuous for 5 minutes or longer to justify an upgrade)
Above 60 ppm	Upgrade to Level B (readings must be continuous for 5 minutes or longer to justify an upgrade)
Off-scale	Evacuate the work area and call the Safety Officer

7.0 RESPIRATORY PROTECTION AND PROTECTIVE CLOTHING

7.1 Respirators

The Safety Office will determine the need for respiratory protection based on observed site conditions and ambient air monitoring. Medical approval is required prior to initial use of a respirator by any individual employee. Respiratory protection used in response to observed hazards shall comply with all applicable Oregon Administrative Code rules as well as the following respirator requirements:

1. *NIOSH Approval:* Only properly cleaned, maintained, NIOSH-approved respirators shall be used.

2. *Selection:* Selection of respirators shall be reviewed with the Safety Officer.

3. Changing Cartridges: As a minimum, air-purifying cartridges, when used, shall be replaced at the end of each shift.

4. *Breathing Resistance or Breakthrough:* Employees wearing air-purifying respirators shall be required to change filter elements whenever an increase in breathing resistance or breakthrough is detected.

5. *Fit Testing:* Only employees who have been fit tested and who have been trained shall be allowed to work in atmospheres where respirators where respirators are required.

6. Reexamination: If an employee experiences difficulty in breathing during the fit test or during use, he or she shall be reexamined by a physician to determine whether the employee can wear a respirator while performing the required work.

7. *Cleaning:* Employees who wear respirators shall be allowed to leave work areas to wash their faces and respirator face pieces as needed to prevent potential skin irritation associated with respirator use. Appropriate decontamination of the respirator will be conducted prior to existing work areas.

8. *Facial hair:* Facial hair that might interfere with achieving a good face piece seal is prohibited.

9. *Inspection:* All respiratory protective equipment will be inspected and maintained on a regular schedule (minimum weekly). The users of the respiratory protective equipment are responsible for this maintenance.

7.2 Level B Activities

For oil spill response activities, where inhalation of contaminated material is probable due to obvious contamination or air monitoring results, spill response personnel will wear pressure-demand, full-face self-contained breathing apparatus (SCBA) or pressure-demand supplied-air respirator (with escape SCBA), splash suits (if organic compounds are present), safety glasses, hard-hat, chemically-resistant outer gloves, and chemically-resistant safety boots.

Protective equipment will be upgraded from those described in Level D and C activities, to include air-purifying respirators as described above, if photo ionization measurements are greater than 60 ppm above background in the breathing zone of site workers, or if there are visible dust emissions from site activity or when dust control measures are not effective.

Excess exposure to noise can occur during work activities. Appropriate hearing protection (ear muffs or ear plugs) will be used if high noise levels are generated.

7.3 Level C Activities

For oil spill response activities, where skin contact with contaminated soil or water is probable, where inhalation of contaminated material is a possibility from visible dust emissions from site activity or wind, or if photo ionization measurements greater than 30 ppm above background in the breathing zone of site workers, spill response workers will wear full-face or half-face air purifying respirator equipped with organic vapor cartridges, hard-hats, chemically resistant outer gloves, chemically-resistant safety boots, and splash suits.

Excess exposure to noise can occur during work activities. Appropriate hearing protection (ear muffs or ear plugs) will be used if high noise levels are generated

7.4 Level D Activities

For general oil spill response activities, where only skin contact with contaminated soil or water is probable, spill response workers will wear hard-hats, safety glasses, chemically-resistant outer gloves, chemically resistant safety boots, and splash suits.

Excess exposure to noise can occur during work activities. Appropriate hearing protection (ear muffs or ear plugs) will be used if high noise levels are generated.

Heavy equipment operators who have no hand contact with the contaminated material may wear leather gloves.

7.5 Confined Space Entry

A confined space is a space which has limited openings for entry and exit, which has unfavorable natural ventilation which could contain or produce dangerous air contaminants, and which is not intended for continuous employee occupancy. Confined spaces include, but are not limited to, storage tanks, compartments of ships, process vessels, pits, ventilation and exhaust ducts, sewers, tunnels, underground utility vaults, pipelines, and open-top excavations greater than four feet in depth.

The procedure for entry into a confined space is similar to the procedure for entry into a hazardous waste site. Because of poor ventilation, high concentrations of gases or vapors are more likely to exist in a confined space than at an open site. Certain confined spaces may contain hazardous materials. For example, hydrogen sulfide and methane are often found in sewers. Also, a large amount of organic material in an enclosed space can combine with oxygen in the surrounding air to produce an oxygen deficient atmosphere.

Small openings for entry and exit can interfere with use of equipment like self-contained breathing apparatus (SCBA). Airiine respirators may have to be used in place of an SCBA. In case a worker is injured, a lifeline is attached to the worker to aid in pulling him out.

Prior to entry into a confined space, test the atmosphere for sufficient oxygen, toxic contaminants, and combustible gases or vapors.

- If the oxygen content is less than 19.5 percent or greater than 23.5 percent, personnel must wear supplied air respirators while in the confined space.

- If toxic chemicals are present, appropriate respiratory protection will be necessary. If purging and ventilation is used, toxicity measurements must be less than ten percent of the established IDHL level of the airborne contaminant present. Organic vapor measurements must coincide with the appropriate level of personal protective equipment worn.

- If combustible gas levels are above ten percent of the lower explosion limit, entry must be delayed until the level falls below ten percent.

As a minimum, initial atmospheric samples shall be drawn while outside the confined space at the following locations:

- Outside the entry point(s).

- Immediately inside the entry point(s).

- At least every four feet in depth of the confined space to the surface of the floor or any remaining residues.

8.0 SITE WORK ZONES

8.1 Exclusion Zones

Exclusion zones for contaminated work areas will be established. Perimeter boundaries should be set up using warning tape, traffic cones, or other measures. Only persons authorized by the Safety Officer will enter this area while work is being conducted there.

8.2 Contamination Reduction Zones

Contamination reduction zones will be established outside the contaminated work areas to decontaminate equipment and personnel before leaving the site. Care will be taken to prevent the spread of contamination from the exclusion zones. Drums will be used to hold soiled protective clothing and decontamination fluids.

8.3 Support Zone

Outside of the contamination reduction zones, support zones will be used to stage clean equipment, don protective clothing, take rest breaks, eat lunch, etc. No contaminated equipment or personnel are allowed in the support zones.

9.0 SITE CONTROL MEASURES

9.1 Site Security

The site zones may be delineated by yellow tape printed with "CAUTION DO NOT ENTER".

9.2 Pre-entry Briefing

Prior to entry onto the site, all personnel will check-in with the Safety Officer and attend a 15 minute pre-entry briefing that will cover the site health and safety plan and the rules and regulations concerning the site.

9.3 Minimization of Contamination

Minimize personnel and equipment used in contaminated areas. Send only the required amounts of soil or water to laboratories for analysis. Do not kneel on contaminated ground, or perform any actions that increases the probability of hand-to-mouth transfer of contaminated materials (eating, drinking, chewing gum, smoking or chewing tobacco). Use plastic drop cloths and equipment covers where appropriate.

10.0 DECONTAMINATION

In order to assure that contaminated materials are not spread from the site, proper decontamination procedures will be employed for both equipment and personnel. Also, procedures for disposal of contaminated materials generated during the course of site operations and decontamination have been established.

10.1 Personnel Decontamination

Personnel with known or suspected contamination will decontaminate thoroughly before eating lunch or leaving the site.

Full decontamination procedures:

a) Detergent wash and clean water rinse boots and outer gloves.
b) Remove outer gloves and protective suit and deposit in labeled drum.
c) Remove respirator cartridges (if end of day) and discard in plastic bag.
d) Remove respirator, wash and rinse in separate buckets.
e) Remove work boots and put on street shoes.
f) Remove inner gloves and discard in plastic bag or dmm.
g) Wash hands and face; shower as soon after work shift as possible.

10.2 Equipment Decontamination

Non-disposable equipment will be decontaminated upon leaving the exclusion zones. All monitoring equipment will be cleaned at the decontamination facility with methanol and then water.

Sampling equipment will be decontaminated by washing with TSP and water, rinsing in water, rinsing in distilled water, rinsing in isopropyl alcohol, air drying, and rinsing again with distilled water. After decontamination, sampling equipment should be wrapped in foil to be ready for reuse.

10.3 Heavy Equipment Decontamination

All vehicles which have entered the exclusion zone must be power washed prior to leaving the site.

10.4 Disposal of Contaminated Materials

Decontamination fluids and rinse water will be placed in labeled drums and stored on site pending testing and disposal according to state regulations, if applicable. Bags filled with used protective clothing will be discarded based on the test results obtained for the associated soil and oil.

11.0 EMERGENCY PROCEDURES

Site personnel must be able to respond effectively to any emergencies that might develop. In an emergency, all site personnel will stop work and retreat to a designated area to determine appropriate response, establish site security and control, and determine a place of safe refuge at an appropriate distance from the emergency. In cases where no immediate danger exists to personnel in contaminated areas, response personnel will wear at least that level of protective clothing which personnel in contaminated areas are required to wear.

In the event that an emergency develops on-site, the procedures delineated herein are to be immediately followed. Emergency conditions are considered to exist if any field worker is involved in an accident or experiences any adverse exposure symptoms while on-site, or a condition is discovered that suggests the existence of a situation more hazardous than anticipated.

The following emergency procedures should be followed:

1. Personnel on-site should use the "buddy system" and work in 2-man teams. Each team should prearrange hand signals or other emergency signals for communicating in case of a lost radio or radio failure. The following examples are suggested:

    - Hand gripping throat: Out of air, cannot breathe.
    - Gripping partner's wrist or placing both hands around waist: Leave area immediately, no debate.
    - Hands on top of head: Need assistance.
    - Thumbs up: Okay; I am all right; I understand.
    - Thumbs down: No; negative.

2. Site work area entrance and exit routes should be planned, and emergency escape routes should be delineated by the Safety Officer.

3. Visual contact should be maintained between "pairs" on-site, with the team remaining in proximity to one another to assist each other in case of emergencies.

4. In the event that any member of the field crew experiences any adverse exposure symptoms while on-site, the entire field crew should immediately halt work and act according to the instructions provided by the Safety Officer.

5. The discovery of any condition that would suggest the existence of a situation more hazardous than anticipated should result in the evacuation of the field team and re-evaluation of the hazard and the level of protection required.

11.1 Emergency Numbers

Emergency telephone numbers will be readily available at the site in a location known to all workers. Use a facility radio or telephone for the following emergency assistance:

- First Aid/Ambulance: 911
- Poison Control Center: 494-8968
- Sheriff/Police: 911
- Fire Fighting: 911

Route to Nearest Hospital: Good Samaritan Hospital
1015 NW 22nd Avenue
(NW 23rd and Lovejoy)

From the facility, go east on Highway 30 (left onto St. Helens Road). Take the NW 23rd Avenue exit. Go south on NW 23rd (approximately 10 blocks) to Lovejoy. Hospital is on left.

11.2 Immediate Response

Should a site emergency occur (serious injury, unconsciousness, fire, explosion, leak of tank contents) cease all work immediately. Offer whatever assistance is required. Those not needed for immediate assistance will follow normal decontamination procedures (if possible), leave the immediate area, and wait for permission to re-start work.

11.3 Emergency Decontamination

In the event that a seriously injured person is also heavily contaminated, loosely wrap the injured person in clean plastic sheeting to prevent contamination of the inside of any ambulance vehicle. Less severely injured individuals will have their protective clothing decontaminated and carefully cut off before being transported to the hospital.

11.4 Reporting and Follow-up

The Safety Officer will notify appropriate personnel as soon as possible after the emergency situation has been stabilized. If an individual is injured, the Safety Officer will file an Accident Report within 24 hours. The Safety Officer must ensure that follow-up action is taken to correct the situation that caused any accident

12.0 MEDICAL SURVEILLANCE

Each worker required to wear respiratory protection will, according to state regulations, receive a physical exam verifying that he/she is in good health and physically able to use protective equipment. Additional exams may be needed to evaluate specific exposures or unexplainable illness. Physician guidelines, in accordance with state regulations, as applicable, shall be followed. Specific content of medical examinations will be determined within guidelines specified in 29 CFR 1910.120 by the examining physician.

13.0 TRAINING REQUIREMENTS

PTSI employees who perform work on the site must understand potential hazards to health and safety associated with work activities. All employees potentially exposed to hazardous substances, health hazards, or safety hazards will therefore have undergone initial 8 Hour Health and Safety Training, and will have a minimum of one day of actual field experience under the direct supervision of a trained supervisor.

All employees will receive site-specific training in the hazards of the site prior to beginning work the first day.

Prior to start of work each day, the Safety Officer or designee will discuss safety practices to be followed that day. These meetings will review the work to be accomplished, with an opportunity for quesfions to be asked.

14.0 DOCUMENTATION

The Safety Officer will be responsible for on-site record keeping which will include certificates of basic training and medical surveillance, daily logs of workers and visitors present at the site, attendance lists for those attending site-specific safety sessions, accident reports, air monitoring results, and signatures of employees who have read the Health and Safety Plan.

All employees will sign the Health and Safety Plan Certification form, which will be kept on site during work activities.

15.0 CERTIFICATION

I hereby certify that I have read and understand the PTSI Health and Safety Plan. I agree to follow the guidelines set forth in this plan during all on-site activities.

APPENDIX J

OIL SPILL CALCULATIONS

Calculation of EPA Planning Distance
(Refer to **40CFR112,** Appendix C, Attachment C-III):

1. Purpose of Calculation

The purpose of the following calculation is tp quantify the downstream distance form the facility in which environmentally sensitive areas or drinking water in takes may be affected by a worst-case discharge from the facility and to determine the spill response resources required.

2. Planning Distance Formulas:

The EPA planning distance formula for oil transport on a moving navigable waterway is based on the velocity of the water body and the time required for response resources to arrive. The EPA planning distance formula is:

$$d = (v)\,(t)\,(c)$$

where

- **v** is the velocity (in feet per second) of the waterway determined from a mathematical model of water flowing in an open channel,
- **t** is the Specitied Time interval for arrival of response resources plus 3 hours for deployment (in hours) and
- **c** is a conversion factor equal to 0.68 second-mile/hour-foot

To determine v, the velocity of the waterway, the mathematical model (Chezy-Manning equation) of velocity for water flowing in an open channel is used. This model is a function of three additional variables as follows:

$$v = (1.5/n)\ (r)^{(2/3)}\ (s)^{(1/2)}$$

where

- n is the Manning Roughness Coefficient (dimensionless), which for regular streams wider than 100 feet is 0.035,
- r is the hydraulic radius (in feet) which is approximately the mid-channel depth multiplied by 0.667 and
- s is the average slope of the river (dimensionless).

In calculating planning distances, facilifies may take into account local conditions which may result in planning distances different from the planning distances derived from the EPA formulas. Facilities must include documentation of altemafive methods used to determine planning distances.

3. Use of Alternative to EPA Specified Time Interval:

The EPA Table 3 contains Specified Time Intervals for the arrival of response resources at the site of the discharge. Response resources must be pre-posifioned to arrive at the site of the discharge site within these Specified Time Intervals. The Specified Time Intervals are adjusted upward by 3 hours to allow for deployment of boom and response equipment. For Portland, which is defined as an "Inland" area, the EPA Specified Time Interval is 27 hours.

For calculating the EPA Planning Distance, the Specified Time Interval of 27 hours for Portland is too long given the local conditions of the lower Willamette and Columbia Rivers for a spill in the Portland area because response equipment is pre-posifioned in several places along the lower Columbia River to arrive in much less than 24 hours. For example, once notified, MSRC can mobilize resources within 1 hour from Portland and other locations, if necessary. Therefore, to calculate the Planning Distance, PTSI has used a 12-hour arrival time plus 3 hours for equipment deployment for an alternate specified Time Interval of 15 hours.

4. Calculation of River Velocity

To calculate the river velocity, the Chezy-Manning equation requires an estimate of the mid-channel depth and the average slope of the waterway. These variables are directly related to one another through their relationship to the river water level. The mid-channel depth increases directly with increasing water level. The average slope of the river also increases directiy with increasing water level.

The water level at Portland varies daily (due to ocean tidal influence) and seasonally (due to natural flows and man-made flows (from Bonneville Dam)). According to U.S. Corp of Engineers, typical low water may be at an elevation of about 15 feet based on Columbia River Datum (C.R.D.). At this water level, the mid-channel depth of the lower Willamette and Columbia Rivers is estimated to average 40 feet. The PTSI facility is located 108 miles from the mouth of the Columbia River so the average slope is estimated to be 15 feet per 108 miles or 0.000028 feet per foot.

At these low water conditions, the average river velocity is calculated using the Chezy-Manning equation to be about 2fps or 1.1 knots. For spill planning purposes, a higher water level is assumed. If the water level reaches an elevation of 30 feed C.R.D., serious flooding would occur in all lowland areas including some areas of metropolitan Portland. Under this extreme condition the river velocity is 3.5 fps or about 2.0 knots. Some people have advocated using a river velocity of 2.5 knots, but this would require a water level at Portland of 40 feet (C.R.D.) which is untenable. For planning purposes, PTSI assumes a water level of 30 feet (C.R.D.) and calculated river velocity of 2.0 knots.

5. Calculated Planning Distance:

Using the Alternative Specified Time Interval of 15 hours and an extreme water level at Portland of 30 feet C.R.D. (mid-channel depth of 55 feet and average slope of 30 feet per 108 miles) the Planning Distance is calculated to be:

35 miles

which extends down the river from the facility to the area of the mouth of the Kalama River at Columbia River Mile 73.

APPENDIX K

PACIFIC TERMINAL SERVICES, INC.
PORTLAND FACILITY

SECTION I APPROVED WASTE HANDLERS

Pacific Terminal Services, Inc. will be working closely with local approved waste handlers who are familiar with Oregon State's rules and regulations as well as transport and disposal options in the state. The Northwest Area Contingency Plan provides a partial list of companies and the services that they provide (Section 7320 NWACP). This list is periodically updated. Only licensed transporters and approved (*or permitted*) treatment and disposal facilities are to be used for waste handling and disposition unless otherwise directed by DEQ.

Approved waste handlers in the Portland area include:

Harbor Oil	503-285-4648
CET Environmental Service	503-227-5892
Advanced Disposal Tech	503-499-6519
Emerald Services	360-699-5275

SECTION II DESIGNATION

The process of classifying wastes as solid or dangerous waste is known as "designation". Laboratory tests or knowledge of the material must be used to determine if the material designates as dangerous waste. PTSI will consult with its' spill contractor, chemical testing laboratory, and the DEQ for advice on designating wastes as dangerous or solid.

Petroleum products such as bunker, diesel, and kerosene generally do not designate as dangerous waste. Recovered oily liquids and other materials contaminated by oil that do not designate as dangerous waste may be recycled, burned, or blended for fuel, without following the requirements of hazardous waste. Recovered oily liquids may be managed as "off specification fuels" under the exemption in the dangerous waste rules, as long as it is used as fuel. Recovered oily liquids and other materials contaminated by oil that cannot be recycled, burned, or blended for fuel are considered solid waste and subject to designation. Testing is generally required to determine whether such mixtures designate as dangerous waste.

Oily waste may be designated as dangerous waste (dangerous waste or extremely hazardous waste) depending on characteristics such as: ignitability, corrosivity, reactivity, toxicity, and persistence.

Wastes may designate as "dangerous waste" because they are:

a. listed (appear on lists for discarded chemical products or from specified industrial processes)
b. ignitable (flash point <140 degrees F)
c. corrosive (pH ≤ 2.0 or ≥ 12.5)
d. reactive (explosive, self-igniting, reactive with water)
e. toxic (specific standards and test methods apply, i.e. Toxicity Characteristic Leaching Procedure (TCLP) and DW bioassay.
f persistent (specific standards and test methods apply)

If a waste is classified as a dangerous waste PTSI will ensure safe management procedures:

a. the waste is placed in proper tanks or stored in closed compatible drums,
b. has appropriate labels and markings,
c. is transported by authorized haulers,
d. is shipped using a Hazardous Waste Manifest,
e. is delivered to an authorized recycler or permitted treatment, storage or disposal facility

If recovered oily liquids and other materials contaminated by oil do hot designate as dangerous waste then they are classified as solid waste.

SECTION III INTERIM STORAGE, SEGREGATION, and TRACKING

A. *INTERIM STORAGE SITES*

Interim storage sites shall be specifically designated in the incident specific disposal plan. The location of interim storage sites is dependent on the approval of the On-Scene-Coordinator (OSC) and local health department. Interim storage sites shall be established with the goal of preventing additional contamination from being reintroduced to the environment or posing a public health threat. Interim storage sites, and roll-off boxes within these sites, should be lined with plastic tarps or visqueen, and bermed to prevent runoff or leakage of oily material. In addition oily debris should be covered with secured tarps or visqueen to prevent rainwater infiltration. Continued use of interim storage sites beyond 90 days is subject to approval by DEQ. Interim storage sites should be returned to the maximum extent

feasible to the sites original condition. Interim storage sites are subject to periodic inspections.

B. *SEGREGATION*

The segregation of wastes facilitates the determination of volume spilled and recovered. The purpose of segregation is to assist determining the volume spilled and recovered. It also helps simplify disposal procedures that may be required by incinerator or landfill operators. Material recovered must be segregated in the following manner unless otherwise directed by the State or Federal OSC:

1. Oil collected from sources other than state waters/shorelines (e.g. on vessels or pier)
2. Oil and oil/water mixtures recovered from state waters/shorelines
3. Oiled organic debris: wood, aquatic vegetation... Oily debris should be placed in clear plastic bags for ease of identifying contents and segregation. To the extent possible efforts should be made to homogenize recovered organic debris, e.g., heavily oiled eel grass should be kept separate from dissimilar debris
4. Oiled sorbent material: oil snares, pads, and booms
5. PPE and other typically non-sorbent materials

C. TRACKING

Continually reporting and updating the Situation Unit with waste management data is a crucial aspect of response. Waste management data is used to assess the progress of the response and to determine potential response needs. Typically waste management data is summarized by the ICS Form 209 which includes total volumes recovered, stored, and disposed of. The Environmental Unit in conjunction with the Situation Unit must assure that this information is accurately reported. Clear lines of communication must be quickly established with Operations to assure that an adequate tracking system is in place. Waste disposal plans should describe the waste tracking system. The use of waste disposition tracking forms is highly recommended.

D. DECANTING

Decanting is addressed in a separate section of the Northwest Area Contingency Plan (Section 4640). The decanting approval form should be attached to the Incident Specific Disposal Plan. The Environmental Unit should endeavor to assure that the intent of the decanting approval is followed.

SECTION IV DECONTAMINATION

Decontamination areas for personnel and equipment, including oiled booms, need to be addressed in the disposal plan. In addition, areas may need to be set up for the

decontamination of oiled vessels. Each area designated as a decontamination site should be addressed in the incident specific disposal plan. The location and set up of each decontamination area should be described in the incident specific disposal plan.

SECTION V ANIMAL CARCASSES

The disposal of animal carcasses may need to be addressed in the disposal plan. The collection of animal carcasses is the responsibility of the Oregon Department of Fish and Wildlife in conjunction with the U.S. Fish and Wildlife Service. Prior to the cleanup of any beach, an agent of the joint trustees should coordinate the removal of oiled carcasses. No oiled carcasses shall be disposed of until authorized by the appropriate natural resource trustee. With the approval of local Air and Health authorities, the DEQ recommends incineration of oiled carcasses at a permitted facility.

SECTION VI WASTE DISPOSITION and FINAL DISPOSAL

PTSI will work closely with approved waste handier(s) in formulating an Incident Disposal Plan (sample plan in appendix). Local approved waste handlers should be knowledgeable in the appropriate rules and regulations concerning proper waste management, transport, treatment, and disposal facilities. For clarification and assistance the regional office of DEQ and/or local government authorities should be consulted.

Hazardous Waste: The following priorities for the collection, handling, and management of hazardous wastes are necessary, and should be followed in descending order as applicable:

A. Waste reduction.
B. Waste recycling.
C. Physical, chemical, and biological treatment.
D. Incineration.
E. Solidification/stabilization treatment.
F. Landfill.

Solid Waste: The following priorities for the collection, handling, and management of solid wastes are necessary and should be followed in descending order as applicable:

A. Waste reduction.
B. Recycling, with source separation of recyclable materials as the preferred method.
C. Energy recovery, incineration, or landfilling of separated wastes.
D. Energy recovery, incineration, or landfilling of mixed wastes.

Waste Reduction: Waste reduction is attainable through prevention and minimization of waste generated during cleanup operations. Waste reduction is the responsibility of the responsible party, cleanup contractors and workers.

Recycling: Recovered liquid oil that is exempt from the dangerous waste regulations should be recycled at a licensed refinery or recycling facility. Pads saturated with oil can be wrung out for recovery of liquid oil for recycling.

Certain solid wastes recovered and generated during cleanup operations can be treated and used again as useful materials. An example is the use of oiled sand, rock and gravel in asphalt production. The waste may be handled at a treatment facility if it does not designate as a hazardous waste or extremely hazardous waste.

Additional options include:

1. Bioremediation
2. Thermal Desorption
3. Asphalt Incorporation

Energy recovery, incineration, or landfilling of separated wastes or mixed wastes:
Energy recovery facilities use the oily debris such as sorbent pads, booms, and oily rags, as a supplemental energy source in a rotary kiln. Incineration refers to burning at an approved facility and open outdoor burning. These both require the approval of Ecology and the local air pollution control authority. Controlled burning can be conducted at an approved energy recovery facility or hog fuel burner.

Thermal desorption: With this method heat does not destroy contaminants but separates them from the media. Sufficient heat is applied to vaporize water, organic compounds, and some volatile metals. Vapors can then be destroyed in an afterburner or collected as liquid for further treatment

Outdoor burning: Open outdoor burning may be a viable option for disposal, if the waste is considered "dangerous material". Prohibited materials may only be burned in an outdoor fire when ordered by a fire protection authority and authorized by Ecology or the local air pollution control authority. However such approval may only be given when the material constitutes "dangerous material" (i.e. materials presenting a danger to life, property or public welfare) and no approved practical alternative method of disposal is available.

Landfilling: Upon attaining local health department approval, oily waste may be disposed of in accordance with landfill guidelines and regulations. Landfill disposition should be planned only for those wastes that other disposal options have been found to be unacceptable. Final approval and acceptance of waste material is at the discretion of the landfill operator.

FINAL REPORT

In addition to daily updates of the disposal plan, at the conclusion of response activities and when all parties have signed off on the closure of the response, a final report shall be provided by the responsible party to DEQ within a timely manner. The final report should state in detail the amount of oily waste generated, disposed of and/or treated. The report should be broken down by how the oily waste material was segregated, e.g., oiled sorbents, free liquids recovered, contaminated soil and other material collected. Disposal receipts should be attached to the final report.

SAMPLE INCIDENT DISPOSAL PLAN

_____
(Incident Name)

Responsible Party: _____
Spilled Material: _____
Spill Volume (estimate): _____
Spill Location: _____
Spill Date/Time: _____
Report Update Time: _____

Disposal Plan Authorization

This plan is written at the request of the USCG and/or EPA and the Oregon State Department of Environmental Quality. PTSI will recover the maximum feasible amount of oil spilled during the above named incident. In addition an unknown quantity of oily waste debris (including plastics, sands, etc.) will be recovered. When disposing of this material, the responsible party will abide by all applicable state, local and federal laws and regulations. Disposed material will be tracked to provide an accurate means of estimating total oil recovered. Each section of this incident specific disposal plan addresses and corresponds with the waste disposal "Guideline" found in Section 9620 of the NWACP.

This plan may be amended as necessary to ensure compliance with all applicable laws and regulations. Amendment may occur only upon mutual agreement of the responsible party, the Federal OSC (USCG/EPA), and/or the State OSC (ODEQ).

Submitted By: _____ Date: _____

Approved by ODEQ: _____ Date: _____

Reviewed by USCG/EPA: _____ Date: _____

Approved by PTSI: _____ Date: _____

Approved by other Local Government Representative(s) (Optional):

_____ Date: _____

SECTION I WASTE HANDLERS

The following licensed transporters and approved treatment and disposal facilities are to be used for waste handling and disposition unless otherwise directed by Ecology. All waste handlers have read and are working in accordance with this plan.

Name of Company
Disposal Functions
Company Representative Signature.

SECTION II DESIGNATION

The spilled material was deemed (non-) dangerous waste based on the following:

SECTION III INTERIM STORAGE, SEGREGATION, and TRACKING

A. INTERIM STORAGE OF SOLID MATERIAL

Interim storage sites will be located at: _____
_____
_____

Provide a description each site, lined roll-off boxes, etc.. Describe how each site was constructed, bermed, covered, etc. to minimize infiltration of rainwater and prevent leaching.

Describe measures that will be taken to return sites to their original condition

DEQ's authorization

B. SEGREGATION

Describe measures taken to ensure material recovered was properly segregated. Material recovered must be segregated in the following manner unless otherwise directed by the State or Federal OSC:

1. Oil collected from sources other than state waters/shorelines (e.g. on vessels or pier)
2. Oil and oil/water mixtures recovered from state waters/shorelines
3. Oiled organic debris: wood, aquatic vegetation... Oily debris should be placed in clear plastic bags for ease of identifying contents and segregation. To the extent possible efforts should be made to homogenize recovered organic debris e.g., heavily oiled eel grass should be kept separate from dissimilar debris
4. Oiled sorbent material: oil snares, pads, and booms
5. PPE and other typically non-sorbent materials

C. *TRACKING*

Describe the waste tracking system used during this response. Include copies of waste tracking forms, (See Appendix 1 for example).

D. *DECANTING*

Decanting authorization form (if approved) should be attached.

SECTION IV DECONTAMINATION

Describe the areas designated for decontamination including location, set up, and pollution prevention measures.

SECTION V ANIMAL CARCASSES

If applicable describe the number of animal carcasses disposed of and methods used for their disposal.

SECTION VI WASTE DISPOSITION and FINAL DISPOSAL

ICS Form 209 Final Waste Status Summary

TYPE	Recovered	Stored	Disposed of
Oil (bbl)			
Oily Liquids (bbl)			

Oily Solids (tons)			
Solids (tons)			

Include copies of waste tracking forms for final disposal if used, (See Appendix A for example). Also, include copies of receipts from disposal facilities.

A. RECOVERABLE OIL

Oil recovered will be transported by_____ to _____.

Company names and Contacts

_____
_____
_____

B. BURNABLE MATERIAL:

Burnable material includes oily wood, debris, PPE, sorbents, oil snares and other suitable organic material collected during cleanup operations. The debris will be transported from the interim storage site by _____ to _____.

Transporter(s)	Facility
_____	_____
_____	_____

C. OTHER MATERIAL:

This material may consist of sand and tar balls and other assorted material that has been collected from the cleanup effort and has been stored at interim storage sites. All of this material will be transported to a licensed facility

Transporter(s)	*Facility*
_____	_____
_____	_____

Recovery

Tracking

Recovery Location(s)	Time Recovered From:	To:	Volume (Gallons*)	Type of Waste	Projected Interim Storage Demand**
totals>					

Interim Storage Tracking

Interim Storage Location(s)	Received From: Location(s)	Time: Received	Volume (Gallons*)	Type of Waste
Totals>				

Final Disposal Tracking

Disposal Facility Location(s)	Received From: Location(s)	Time: Received	Volume (Gallons*)	Type of Waste
Totals>				